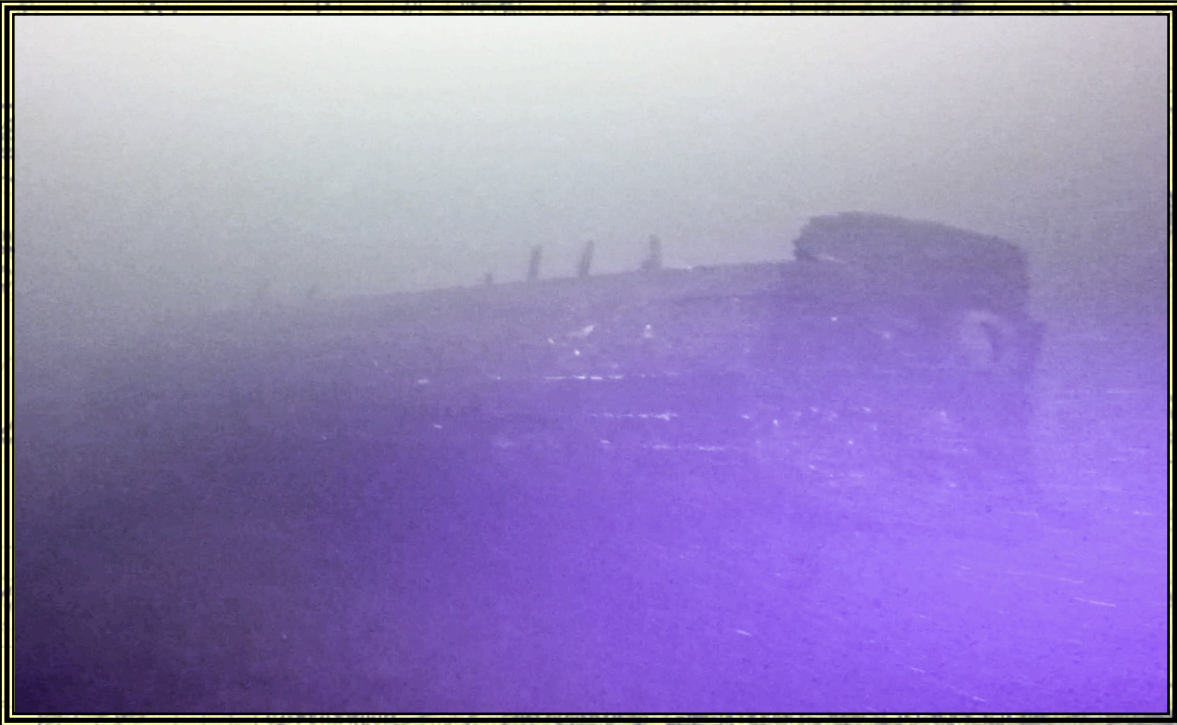


MARITIME HERITAGE MINNESOTA



Ann Merriman
Christopher Olson

Lake Minnetonka Nautical Archaeology 6 Project Report



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Acknowledgments

Maritime Heritage Minnesota (MHM) thanks the People of Minnesota for their support of the Minnesota Historical and Cultural Heritage Grant program of the Arts and Cultural Heritage Fund of the Clean Water, Land and Legacy Amendment; without the MHCH Grant MHM received to conduct this project, the work would not have been undertaken. MHM would also like to acknowledge the Grants Office of the Minnesota Historical Society for their expertise. We thank Amanda Gronhovd and Bruce Koenen of the Office of the State Archaeologist for their efforts. MHM thanks John Nordby of the Department of Natural Resources for his time and patience with our requests for information. MHM thanks David Olson and Jeff Jensen for their knowledge and willingness to share it. MHM thanks Alison Bagley, Keith Bagley, and the nice folks who participate in the Correct Craft Fan online forum; their insights have been valuable. MHM could not have completed this project without the in-kind support of volunteer divers Josh Knutson, Kelly Nehowig, Ed Nelson, and Mark Slick. MHM thanks these talented and ethical men for their time and skill. This project could not have been completed in a timely fashion without the consideration of MHM's Chair and Commodore Michael F. Kramer for the on-lake storage of MHM's boat. Lastly, MHM thanks our Board of Trustees Mike, Deb Handschin, and Steve Hack for their continual support.

Maritime Heritage Minnesota Staff, Volunteers, Board of Trustees, & Mascots



Introduction

Wrecks and the artifacts associated with them tell a story. Removing or otherwise disturbing artifacts, treating them as commodities that can be sold, obliterates that story. Nautical archaeological and maritime sites are finite, and are significant submerged cultural resources. Nautical, maritime, underwater, maritime terrestrial – Maritime Heritage Minnesota's (MHM) deals with all of these types of sites throughout the State of Minnesota. MHM's Mission is to document, conserve, preserve, and when necessary, excavate these finite cultural resources where the welfare of the artifact is paramount. MHM is concerned with protecting our underwater and maritime sites – our shared Maritime History – for their own benefit in order for all Minnesotans to gain the knowledge that can be obtained through their study. MHM's study of wrecks does not include the removal of artifacts or damaging the sites in any way. MHM does not raise wrecks or 'hunt' for 'treasure'. Submerged archaeological sites in Minnesota are subject to the same State statutes as terrestrial sites: the Minnesota Field Archaeology Act (1963), Minnesota Historic Sites Act (1965), the Minnesota Historic District Act (1971), and the Minnesota Private Cemeteries Act (1976) if human remains are associated with a submerged site. Further, the case of *State v. Bollenbach* (1954) and the Federal Abandoned Shipwrecks Act of 1987 provide additional jurisdictional considerations when determining State oversight and "ownership" of resources defined by law as archaeological sites (Marken, Ollendorf, Nunnally, and Anfinson 1997, 3-4). Therefore, just like terrestrial archaeologists working for the State or with contract firms, underwater archaeologists are required to have the necessary education, appropriate credentials, and hold valid licenses from the Office of the State Archaeologist (OSA).

MHM completed two side and down-imaging sonar surveys of Lake Minnetonka in September-November 2011 and May-June 2012 – the Lake Minnetonka Surveys 1 and 2 Projects (LMS-1, LMS-2). Prior to MHM's two comprehensive surveys, there was one recognized nautical archaeological site on the lake bottom and another five wrecks were known. MHM completed the Lake Minnetonka Nautical Archaeology 1-5 Projects (LMNA-1, LMNA-2, LMNA-3, LMNA-4, LMNA-5) between 2012-2015. At the beginning of the Lake Minnetonka Nautical Archeology 6 Project (LMNA-6) in early June 2016, there were 48 known wrecks (including the Lake Minnetonka North Arm Dugout Canoe removed from the lake in 1934), 18 maritime sites/cultural resources, and 15 'other' objects identified on the bottom of Lake Minnetonka.

Preface

During the Lake Minnetonka Nautical Archaeology 6 Project (LMNA-6), MHM investigated 4 known wrecks and 49 unknown anomalies. The fieldwork was conducted from early June to early September 2016.

Results of the Lake Minnetonka Nautical Archaeology 6 Project

Research Design

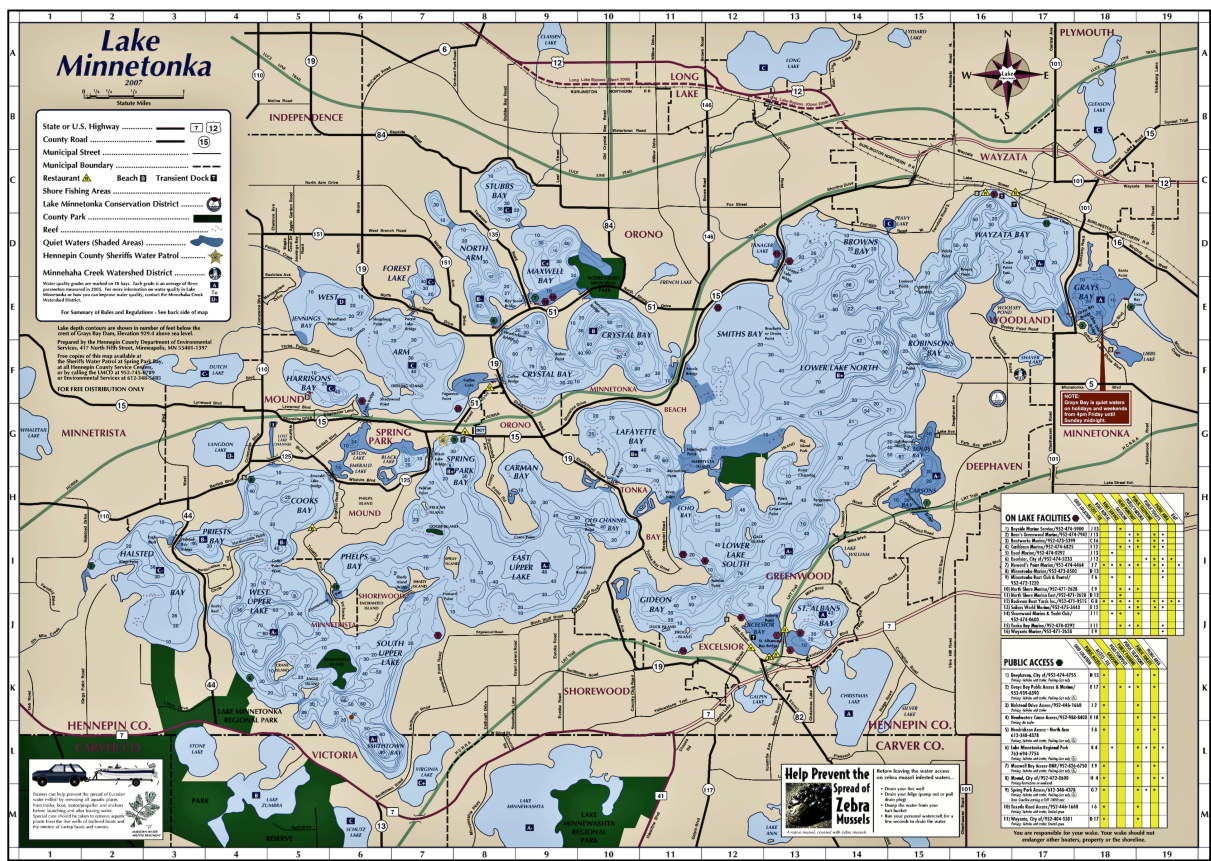
The purpose of the LMNA-6 Project was to conduct condition assessments and answer questions about known wrecks, determine the nature of specific anomalies to answer questions about their nature, and to continue MHM's sediment build-up study. MHM determined which anomalies would be investigated from an analysis of sonar data that suggested they were submerged cultural resources. Each anomaly was assigned a number upon its recognition as a possible site. The 46 anomalies examined during the LMNA-6 Project were 8.1a-c, 8.3, 16, 22.1, 26.1, 33, 77, 78, 93, 94, 96, 141, 159, 161, 209, 225, 227, 239.1, 507, 523, 524, 556, 578, 584, 585, 586, 587a-b, 589, 594, 595, 597, 599, 600, 601, 603, 604, 606, 607, 608, 609, 610, 612, 622, 629, 631, and 642. The 4 known wrecks visited during this project were the Streetcar Boat *White Bear* (21-HE-281), Flat Bottomed Rowboat Wreck 1 (Anomaly 78.1, 21-HE-488), *Doug Out* Wreck (Anomaly 403, 21-HE-493), and the Owens Twin Sport Wreck (Anomaly 91). Further, anomalies 85, 96.1 and 602 were not investigated using SCUBA; they were identified by their sonar signatures, making a total of 49 anomalies investigated during this project. Using data accumulated from the fieldwork as a starting point, MHM conducted research to place newly recognized nautical archaeological sites and anomalies in their historical contexts. Minnesota Archaeological Site Forms were filed with the OSA when appropriate.

Methodology

The methodology used to identify and rudimentarily document underwater archaeological anomalies is straightforward. MHM used the GPS coordinates of a wreck or an anomaly to drop a weighted diver down buoy near the target. The dive boat anchored a short distance away from the buoy and divers geared up for the dive. At any given time, there were between two and four divers underwater. If the buoy anchor weight landed near and sometimes on the anomaly or wreck, no search for the target was conducted. However, for a variety of reasons, a brief search for the target was conducted until it was located or it was determined that the anomaly was a false sonar return. If a cultural or natural resource was located, the divers photographed and recorded video of the site or object, logged its basic measurements, examined any obvious attributes, and measured sediment build-up (if appropriate).

Results

After the completion of the LMNA-6 Project fieldwork in early September 2016, there are now 59 identified wrecks on the bottom of Lake Minnetonka or that were once on the bottom, including a Woodland Culture dugout canoe removed from the lake in 1934. Of these wrecks, 40 of them have 39 Minnesota archaeological site numbers; 2 wrecks are features of one site. Further, 3 other types of maritime sites have archaeological site numbers and there are 19 maritime sites or objects without numbers. Additionally, 23 'other' objects have been identified that do not have site numbers, including 8 vehicles that include a snowmobile, truck, and 6 cars. During the LMNA-6 Project specifically – of the 49 anomalies investigated – MHM and its volunteers confirmed the existence of 11 new wrecks, 4 new submerged maritime sites, 1 new section of an existing maritime site, 10 'other' sites, 1 large cut tree stump, 3 trees (2 cut and 1 natural), 7 rocks or rock piles, 2 weed clumps of weeds at unexpected water depths, and 10 false sonar returns comprised of unusual bottom contours.



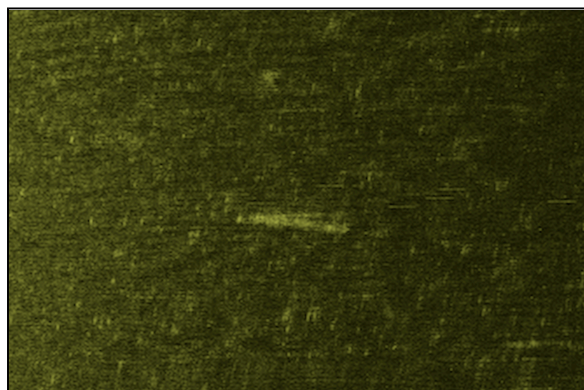
Lake Minnetonka (Lake Minnetonka Conservation District).

North Arm Rowboat Wreck Site (21-HE-487)

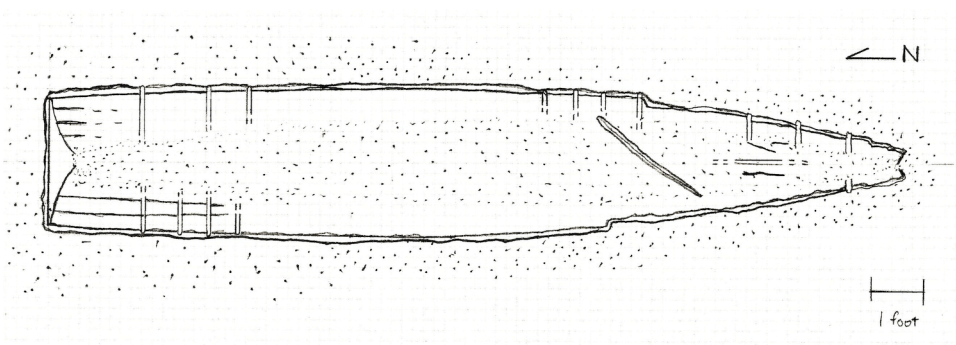
MHM recorded a sonar image of Anomaly 77 during the LMS-2 Survey in May 2012. The North Arm Rowboat Wreck is 15.70 feet long and 2.70 feet wide. The depth of hold

cannot be determined because the gunwales of the wreck have deteriorated – with the exception of the stern quarters and transom – or have been displaced. The wreck's bow is sharply pointed, it has a wineglass stern, has lapstrake construction, and the outer hull is painted white. Thin longitudinal stringers lie along the bottom and sides of the wreck and numerous thin frames and futtocks are attached to them. Most portions of the wreck are covered in zebra mussels, but in a clear area on the port side outer hull, white paint is evident. The wreck, while damaged in places, exhibits detailed construction attributes that indicate a competent level of craftsmanship. The North Arm Rowboat Wreck has light silt covering it along with a smattering of vegetation, and lies in about 20 feet of water.

The North Arm Rowboat Wreck is lightly – but skillfully – built like other known small wrecks on the lake bottom, in particular the Wayzata Bay Rowboat Wreck (21-HE-417), the Gideon Bay Wreck (21-HE-415), the St. Louis Bay Wreck (21-HE-422), and the Crystal Bay Rowboat Wreck (21-HE-457)¹. Whether the boat sank accidentally or was scuttled cannot be determined. The boat was likely constructed in the 1880-1890s and since the average lifespan of a small wooden boat was not extremely long, a site disposition date of 1890-1900 is reasonable. The lack of sediment build-up on the wreck site indicates that water moves through North Arm rather quickly and does not drop particles out of the water column readily. MHM submitted an archaeological site form for the North Arm Rowboat Wreck to the OSA in late August 2016 and received her site number, 21-HE-487, at that time.



MHM's sonar image of the North Arm Rowboat Wreck (21-HE-487).



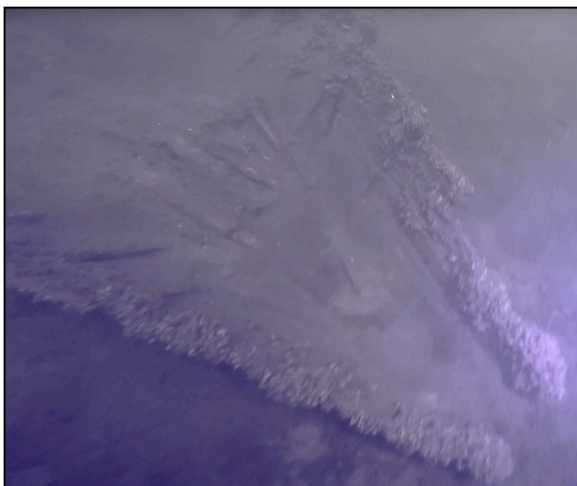
A sketch of the North Arm Rowboat Wreck (21-HE-487, Christopher Olson).

¹See MHM's *LMNA-1 Project Report*, *LMNA-2 Project Report*, and *LMNA-4 Project Report* for more information.



Above: The wineglass stern of the North Arm Rowboat Wreck (Kelly Nehowig).

Left: Looking toward the bow of the North Arm Rowboat Wreck from the port side (Kelly Nehowig).



Above: Amidships of the North Arm Rowboat Wreck (Mark Slick).

Left: The bow (Mark Slick).

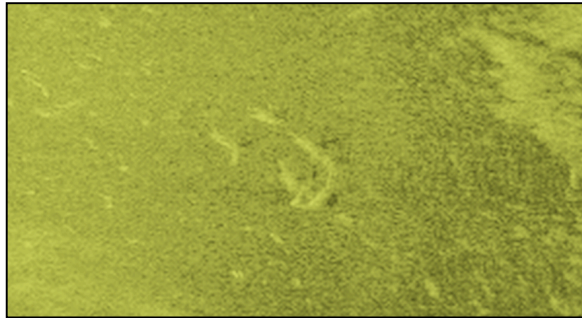
Fisherman's Friend Wreck 2 Site (21-HE-489)

MHM recorded a sonar image of Anomaly 610 during the LMS-2 Survey in May 2012. The Fisherman's Friend Wreck 2 derives its name from the model of small rowboat produced by the Ramaley Boat Company in 1913 or later at its Wayzata location (Ramaley purchased Moore Boat Works in 1912 and began production after that boating season). Another possible manufacturer of the boat was Wise Boat Works of Wayzata. The design is simple and the vessel could have been built by an established boat works, or an amateur boat-builder. The first Fisherman's Friend Wreck (21-HE-485) identified by MHM is located in Wayzata Bay.² The Fisherman's Friend Wreck 2 is 15.00 feet long, 3.20 feet wide, with a 12.00-inch depth of hold at the stern. The wreck's bow would have been pointed, but only the stempost with two hull plank fragments attached to it survive, but are detached from the wreck. The hull is carvel-built, it has a square stern, and a flat athwartships-planked bottom that is a diagnostic attribute for the Fisherman's Friend design. Although the wreck is profusely covered in zebra mussels, a

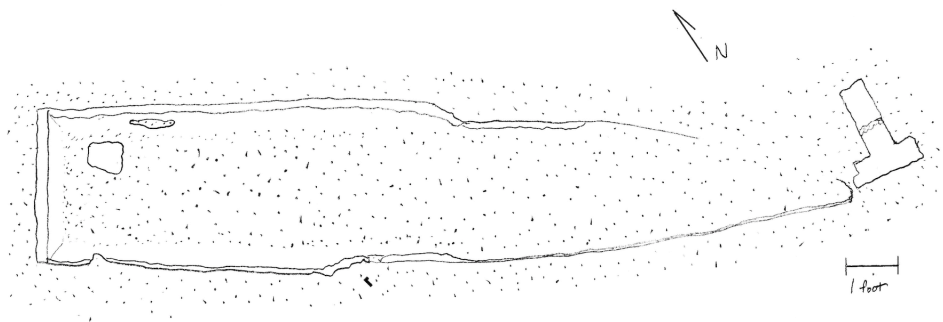
²See MHM's *Lake Minnetonka Nautical Archaeology 5 Project Report* for more information.

small section of exposed hull indicates it is painted white. A large rock sits in the wreck at the stern, indicating the wreck was likely scuttled.

The Fisherman's Friend Wreck 2 was probably constructed in the 1890s and since the average lifespan of a small wooden boat was not extremely long, a site disposition date of 1900-1910 is reasonable. At its deepest, the wreck has 3 inches of silt build-up within the hull, indicating the water in this section of Lake Minnetonka moves rather quickly, with little sediment settling out of the water column over the decades. MHM submitted an archaeological site form for the Fisherman's Friend Wreck 2 to the OSA in early September 2016 and received her site number at that time.



MHM's sonar image of the Fisherman's Friend Wreck 2 (21-HE-489).



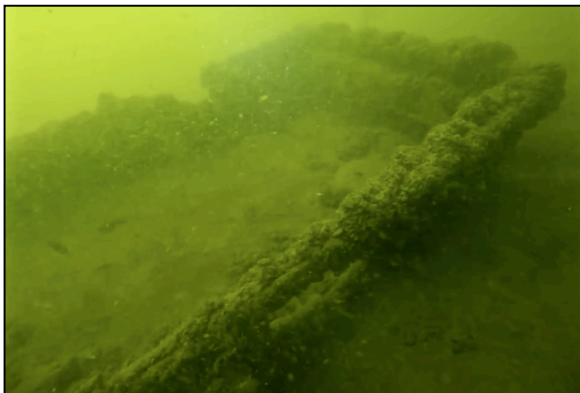
A sketch of the Fisherman's Friend Wreck 2 (21-HE-489, Christopher Olson).



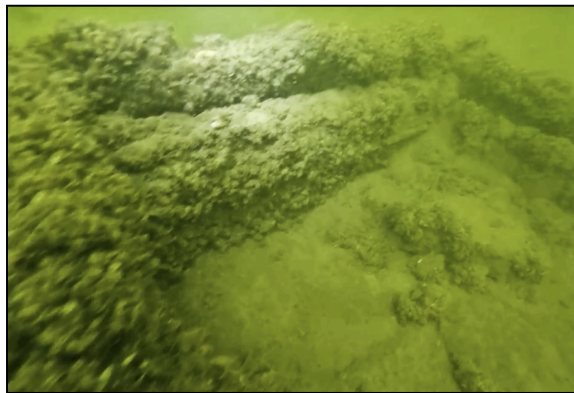
Looking toward the bow of the Fisherman's Friend Wreck 2 from the starboard side (Kelly Nehowig).



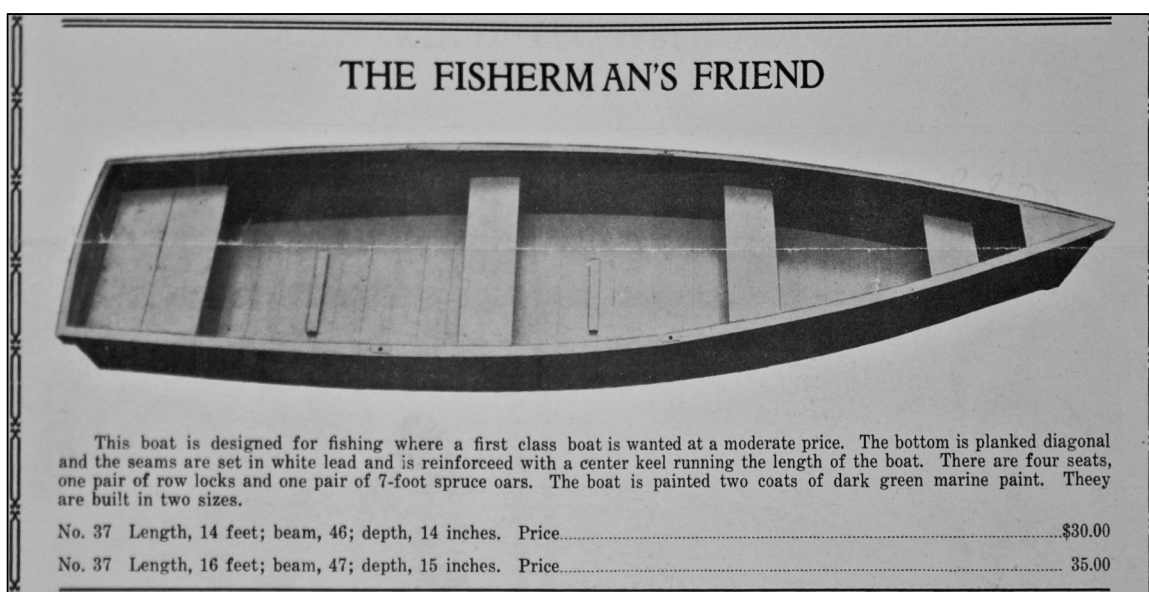
The displaced stempost of the Fisherman's Friend Wreck 2 (Kelly Nehowig).



Looking toward the stern from the port side of the Fisherman's Friend Wreck 2 (Kelly Nehowig).



The transom stern of the Fisherman's Friend Wreck 2 (Kelly Nehowig).



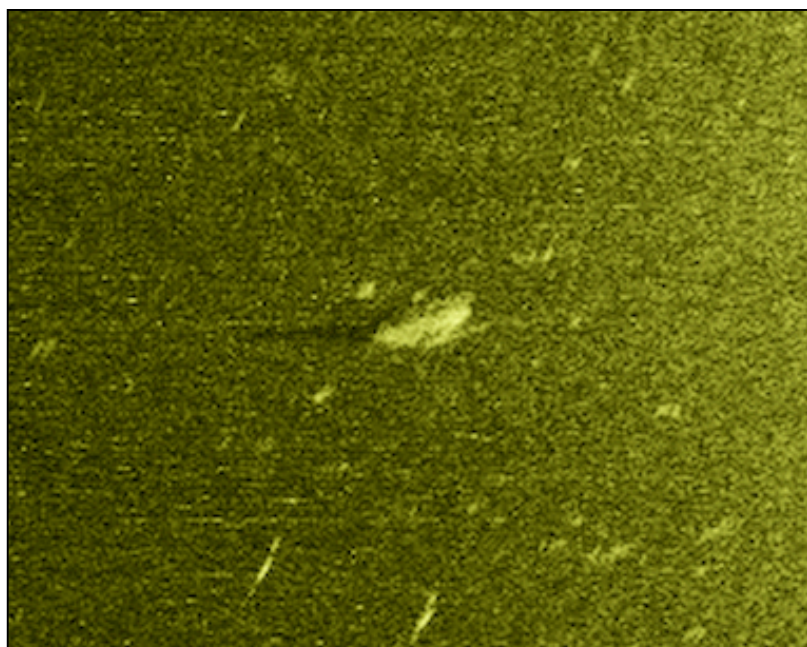
A Fisherman's Friend by the Ramaley Boat Works (Ramaley Boat Company ~1913).

Ramaley Family Motor Boat Wreck Site (21-HE-490)

MHM recorded a sonar image of Anomaly 507 during the LMS-1 Project in September 2011. The wreck's name is derived from the designation given to this vessel design by the Ramaley Boat Works, defined by its stern configuration. MHM contends that the wreck is a Ramaley Family Motor Boat based on its dimensions and 'Normand' Torpedo Stern, also known as a French Stern, named after accomplished French naval architect Admiral F.A. Normand in 1904. This torpedo stern design differs from the Lake Minnetonka Streetcar Boat stern in that, while it is pointed, it also has a 'scalloped' wedge design on the port and starboard stern quarters, and it rakes slightly aft. This design innovation, an improvement over square transoms (that caused large wakes under speed) and curved transoms (that were sluggish when traveling astern), left no wake when traveling at any speed. Early descriptions of Normand Torpedo stern and

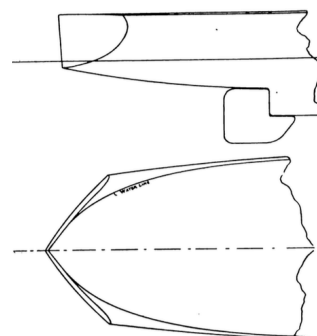
similarly designed gas boats referred to them as Auto Boats (Atkin ND; *The Automobile* 1904, 5; Nock 1907, 14-15).

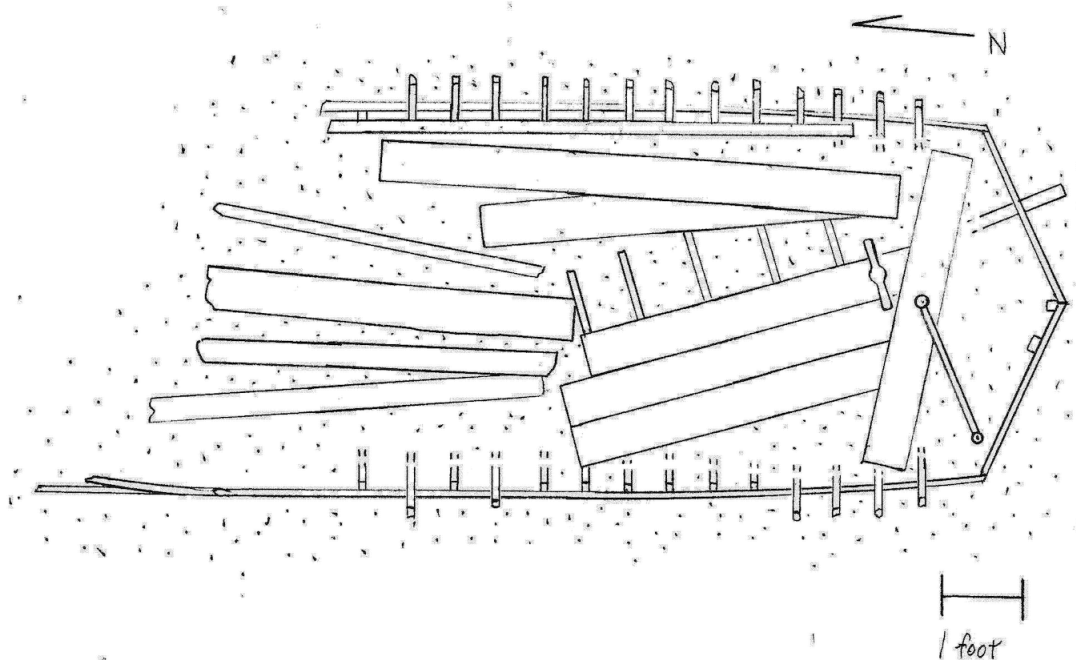
The Ramaley Family Motor Boat Wreck is fragmented, with only the stern section of the boat extant. The remains of the wreck measure 12.50 feet long by 4.80 feet in the beam; the vessel was probably 22.00 feet long and 5.00 feet in the beam when constructed and when the gunwale was intact. The hull break is irregular and there are signs of burning among the fragments. Portions of intact decking lie in the hull along with fittings such as a cleat (made of nickel-plated brass, Ramaley Boat Works, 1911) and the tiller. Futtocks are visible throughout the surviving aft hull portion, attached to the hull with slot-headed woodscrews attached from the inside of the wreck. Slot-headed wood screws are also seen at the stern, holding the sternpost to the outer hull planks from the outside of the wreck. The bottom of the sternpost is protected by a fitted metal piece that acted as a stern reinforcement. The outer hull has traces of white paint still extant and the wreck is propped up on its rudder that it is visible when seen from the south. The 3-bladed propeller is forward of the rudder and the keel protrudes from the wreck bottom. A few zebra mussels are attached to the wreck, regardless of its water depth of 50 feet. For the Ramaley Family Motor Boat Wreck site, the 2 significant diagnostic attributes are the Normand Torpedo Stern and slot-headed wood screw construction. There are several irregularly shaped anomalies nearby that may be the wreck's bow. Based on the appearance of the Ramaley Family Motor Boat in Ramaley catalogs, MHM contends the vessel was constructed around 1910, but it could have been built as early as 1904. Considering the site conditions and lack of significant silt build-up, water moves through the area where the wreck lies rather quickly. MHM supports a sinking date of pre-1930, giving the boat an on-the-water-life of around 20 years. MHM submitted an archaeological site form for the Ramaley Family Motor Boat Wreck to the OSA in mid-September 2016 and received her site number, 21-HE-490, at that time.



Right: MHM's sonar image of the Ramaley Family Motor Boat Wreck (21-HE-490).

Below: The lines of the Normand Torpedo Stern (Nock 1907, 13).





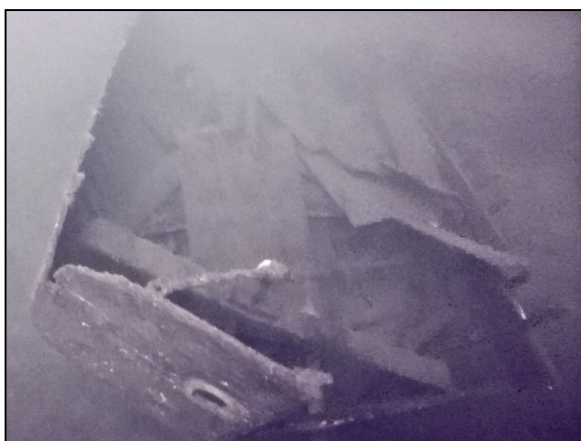
A sketch of the Ramaley Family Motor Boat Wreck (21-HE-490, Christopher Olson).



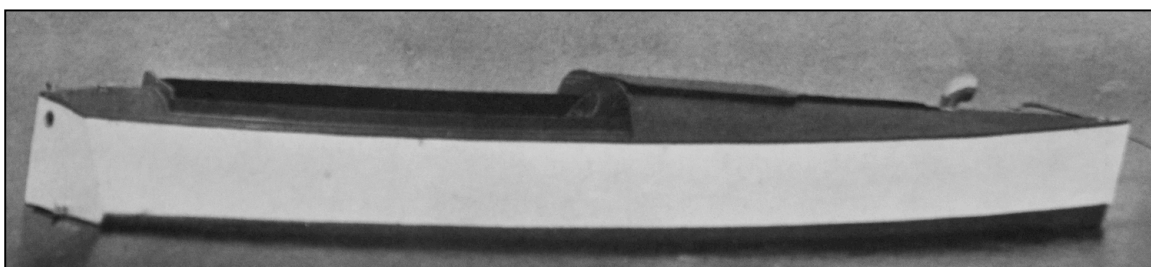
Approaching the Ramaley Motor Boat Wreck from the port quarter (Mark Slick).



The Normand Torpedo Stern of the Ramaley Family Motor Boat Wreck (Mark Slick).



A jumble of decking and fittings inside the hull (left, Mark Slick, right, Kelly Nehowig).



A Ramaley Family Motor Boat (Ramaley 1911).

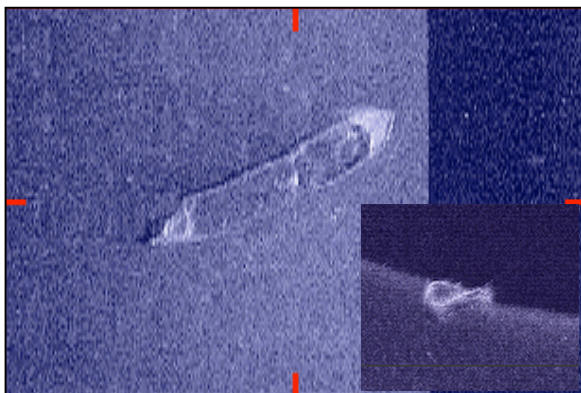
Update: *White Bear* Wreck Site (21-HE-281)

MHM addressed the Streetcar *White Bear* Wreck during the LMS-1 Project³, recording sonar images of the site in September 2011 and submitting a site form update to the OSA. Briefly, *White Bear* was built in 1906 as part of the Twin City Rapid Transit Company's streetcar boat fleet. Her sisters were the *Como*, *Harriet*, *Hopkins*, *Minnehaha*, *Stillwater*, and in 1915, *Excelsior*. Royal Moore of Wayzata designed these 'express boats' with 'torpedo' sterns, were propeller-driven using steam engines and boilers, were 70.00 feet long, 14.83 feet in the beam, had a 3.00-foot depth of hold, and measured 5.00 feet from the keel to the gunwale. *White Bear* was sunk to the bottom of Lake Minnetonka in 1926 in 65 feet of water.

The State Historic Preservation Office (SHPO) sponsored a targeted sonar survey of a section of Lower Lake Minnetonka in 1996 to produce images of the six known wrecks *Como*, *George/Excelsior*, *Hercules*, *Hopkins/Minnetonka*, *Minneapolis*, and *White Bear*. These researchers also conducted two reconnaissance dives on the *White Bear* to record her basic measurements (Hall, Birk, and Newell 1997, 53-62). The purpose of MHM's work on the *White Bear* Wreck site in 2016 was to perform a site condition assessment to chronicle obvious changes to the wreck in the last 20 years. Also, this current investigation will act as a baseline for future projects. Wrecks such as the *White Bear* can become destinations for divers and often damage can occur to the site. The SHPO project produced an artist's rendering of *White Bear* that can be used as a baseline for the wreck's condition 20 years ago.

The *White Bear* Wreck is in excellent condition, but MHM has determined that the 1996 artist's rendering is inaccurate in places. The major differences between the drawing and the wreck's current condition are 6 metal rods that stick out of the silt and some chocks and cleats are not noted in the drawing, the upper deck railing that lies in the hull is drawn in the wrong place, and the port stern quarter railing is displaced. Other details that differ from the drawing include the amount of silt accumulated in the hull. On the starboard side, the silt is low enough near the stern so that the wall paneling is visible and the slots that accept the windows when they are opened are extant. These discrepancies are explained through data or artist's errors with the exception of the displaced port stern quarter railing. This railing was ripped off the wreck by an anchor, leaving it in the silt, upside down next to the hull. The railing is lying in the silt next to the wreck. Further, the starboard side rubrail metal strap has dislodged from the wreck forward and aft, but it remains attached amidships. It is unknown if it was in place in 1996 since the artist's perspective shows the port side, not the starboard side. An interesting attribute MHM noted during the investigation were the saw marks on the window pillars that workman created when the superstructure was removed prior to sinking. MHM submitted an archaeological site form update for the *White Bear* Wreck to the OSA in October 2016.

³See MHM's *Lake Minnetonka Survey 1 Report* for more information.



Above: MHM's sonar images of the *White Bear* Wreck (21-HE-490).

Right: The bow of the *White Bear* (Kelly Nehowig).



Update: Flat Bottomed Rowboat Wreck Site (21-HE-288, Formerly Maxwell Bay Rowboat Wreck 2)

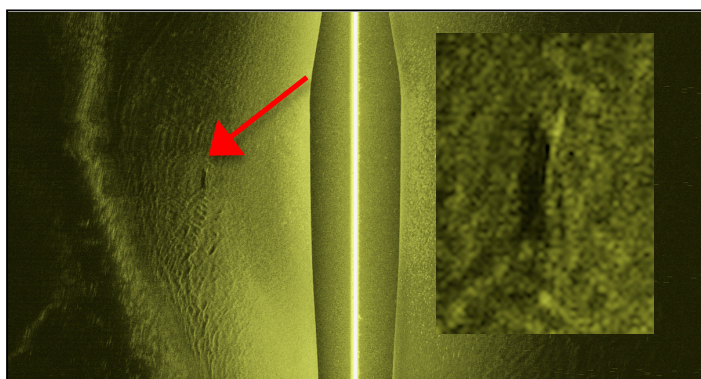
MHM recorded a sonar image of the Flat Bottomed Rowboat Wreck (Anomaly 78.1) during the Lake Minnetonka Survey 2 Project in May 2012. The wreck was identified during the LMNA-4 Project and revisited during the LMNA-6 Project for some data clarifications. The wreck is 13.80 feet long and 3.20 feet wide, with hull planks that measure 3.25 inches wide. There is 3.50 inches of sediment built-up in the hull. The sharply-pointed and steeply-raked bow is unique when compared to the other small Lake Minnetonka wooden wrecks identified to date⁴. These other wrecks have plumb (vertical) or nearly plumb stem rakes while the construction and design of the Flat Bottomed Rowboat Wreck 1's bow is exceedingly different. The hull is carvel-built and sturdy, with thick plank widths, indicating the boat was heavily built. From the bow to stern, the hull narrows only slightly to the square transom. The flat bottom is athwartships planked.

The top of the stempost of the sharply pointed bow is damaged and it has a metal ring with an anchor thimble attached. Behind the loop and thimble, an anchor roller with a trapezoidal base plate is loose, but it was once attached between the forward gunwales. Two thin stringers are attached to the upper most strakes on both port and starboard; these beams add forward strength and served as an attachment point for triangular decking that is no longer extant. Amidships, longitudinal two-by-four stringers are attached to the inner hull as supports for a thwart seat that lies loose inside the hull. Thinner stringers are attached to the port and starboard stern quarters inside the hull, on the upper and lower strakes, along with vertical corner braces; again, the upper stringers are supports for a missing thwart seat. Between the amidships and stern seat stringers on port and starboard, two futtocks are attached to the inner hull for support. These futtocks are not true frames since they do not extend across the bottom of the

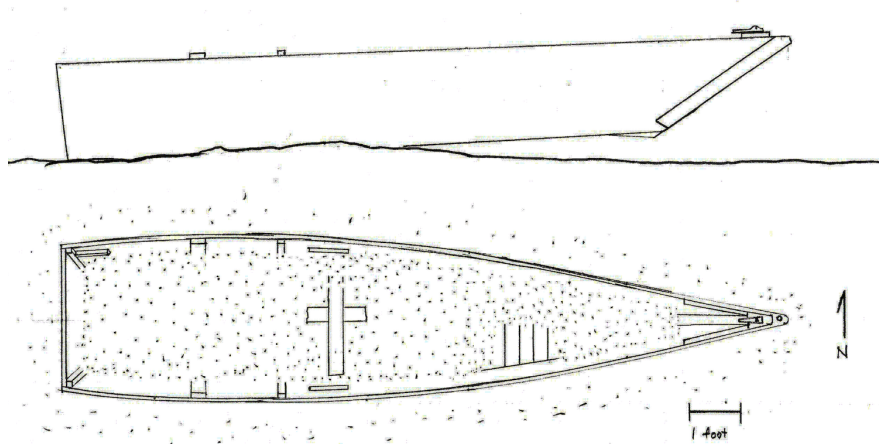
⁴See MHM's *LMNA-1 to LMNA-5 Project Reports* for more information.

hull in the form of floors, but they serve the same purpose as traditional frames. It appears that the hull had layers of paint or primer; bits of light blue paint with a white undercoating are seen on the forward sections of the wreck toward bow.

The most interesting attribute of the Flat Bottomed Rowboat Wreck is the bow's steeply raked design and the composite stempost. The stempost is comprised of two beams, one trapezoidal in cross-section and the other triangular. The trapezoidal piece is set behind the triangular piece and the wreck's strakes are rabbeted into the stempost. Below the stempost, a small bow rub strake is attached to the outer hull. These attributes - the steep rake, composite stempost, and the rub strake - that are put together to form the bow of this small wooden rowboat, combine to make the Flat Bottomed Rowboat Wreck a unique example in the underwater archaeological record of not only Lake Minnetonka, but Minnesota. Beyond their rarity, this combination of attributes are indicators how the boat was operated during its working life; they suggest the Flat Bottomed Rowboat Wreck 1 often landed on shoreline that required a high reinforced bow to absorb the shock of hitting rocks or being dragged along hard ground. The wood of the hull and the main metal components are in good condition. MHM contends this wreck was constructed in the 1910s based on its construction and design attributes. Further, it likely sank before 1930 since these small craft were often constructed of inexpensive materials that would not remain sturdy on the water for too long. MHM submitted an archaeological site form for the Flat Bottomed Rowboat Wreck to the OSA in late August 2016 and received her site number, 21-HE-488, at that time.



MHM's sonar image of the Flat Bottomed Rowboat Wreck 1 (21-HE-488).



A sketch of the Flat Bottomed Rowboat Wreck 1 (21-HE-488, Christopher Olson).



The bow and stern of the Flat Bottomed Rowboat Wreck 1 (Kelly Nehowig).



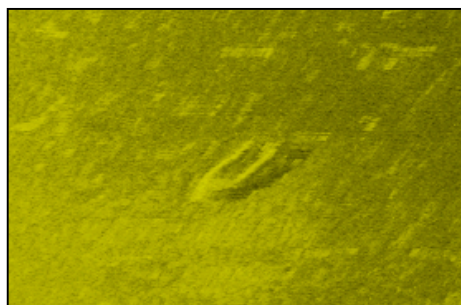
A small Minnesota boat that resembles the Flat Bottomed Rowboat Wreck 1. Note the people in are paddling the boat, not rowing. This photo was taken prior to 1915 (MNHS GV3.61r31, digitized by MHM).

Wooden Outboard Utility Wreck Site (21-HE-491)

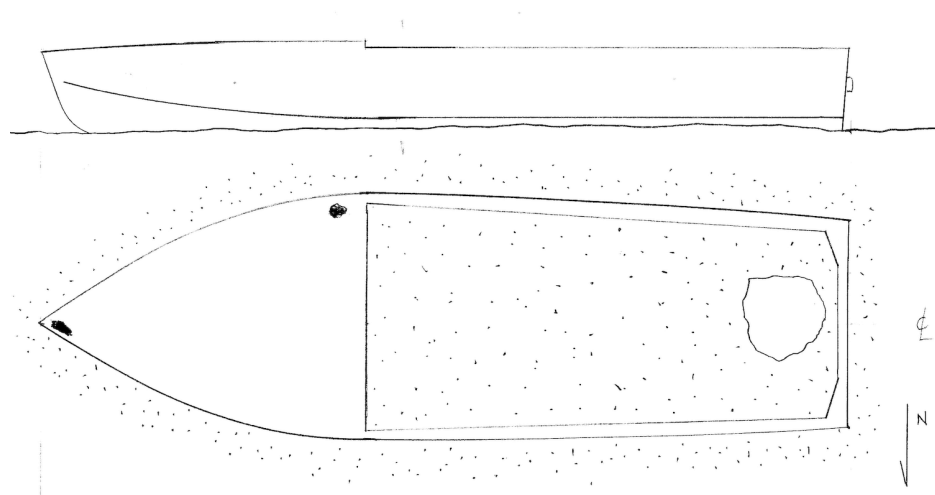
MHM recorded a sonar image of Anomaly 159 during the LMS-1 Project in September 2011. However, since the research boat passed directly over the wreck, it was not immediately identified and the anomaly was not a top priority. In early June 2016, MHM volunteers Kelly and Ann Nehowig investigated the anomaly after recording a great sonar image of it, determining the site was a wooden wreck. MHM returned to the site with volunteers Kelly, Mark Slick, and Josh Knutson on subsequent days to continue her documentation and answer questions raised during the initial dive. The Wooden Outboard Utility Wreck is 14.00 feet long, 3.90 feet in the beam, and 3.60 feet at the square stern with a 5.60-foot slightly cambered foredeck. The hull is carvel-built with longitudinal plank widths of .55 or .70 inches and the foredeck planks run athwartships. The gunwale is intact throughout the wreck, with a significant widening at the foredeck. Futtocks are visible along both sides of the inner hull that are attached to 3 stringers that run the entire length of the wreck. A splash rail extends the entire length of the outer hull both port and starboard.

The transom is designed for an outboard motor that is not attached to the wreck. MHM contends the vessel once had a steering wheel that would have been attached to the underside of the dashboard, but all evidence of it and the steering cables are gone. Remnants of a wooden brace for the missing windshield survive on the foredeck and a hole at the bow probably held a navigation light or reflectors. The only metal fittings left on the hull are loops on the transom for trailer attachments and some pieces attached to the inside of the gunwale.

The Wooden Outboard Utility Wreck is heavily built, is held together with slot-headed woodscrews, and is covered in several layers of paint. Traces of blue and green paint are seen amidships, small traces of red are on the foredeck and starboard side, and a top layer of white paint survives on much of the hull inside and outside. MHM contends the boat was intentionally sunk after being stripped of her fittings. There is a large rock and a mechanical breaking system of a car or truck in the aft portion of the wreck that were used to weigh the vessel down to assist in her scuttling. Water moves through this area of Lake Minnetonka rather quickly as determined by other nearby submerged cultural resources, so the accumulation of 10 inches of silt in the hull indicates that the wreck has been on the lake bottom for a significant amount of time. Further, the wreck has no registration number indicating she sank prior to July 1, 1959. MHM contends, based on the wreck's simple but sturdy design, slot-headed wood screw construction, and the site conditions that she was constructed prior to 1930 and sank prior to 1950. MHM submitted an archaeological site form for the Wooden Outboard Utility Wreck to the OSA in late September 2016 and received her site number, 21-HE-491, at that time.



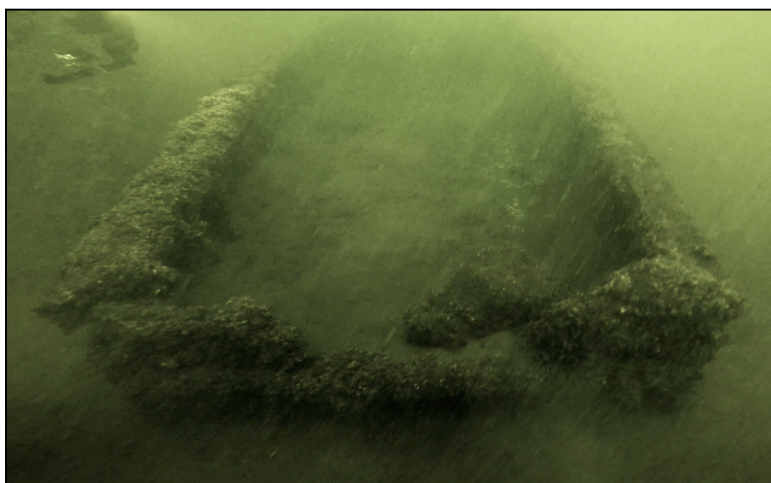
MHM's sonar image of the Wooden Outboard Utility Wreck (21-HE-491).



A sketch of the Wooden Outboard Utility Wreck (21-HE-491, Christopher Olson).



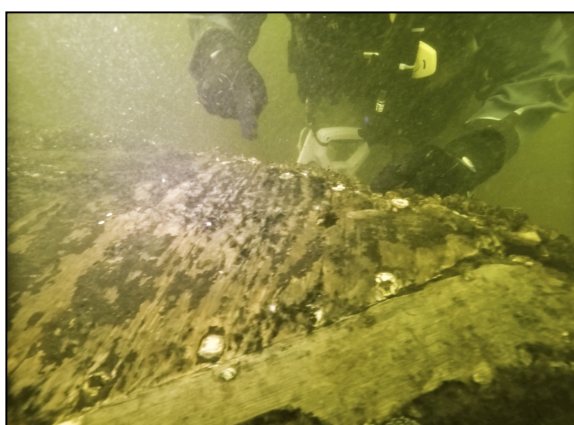
The Wooden Outboard Utility Wreck from the starboard bow showing the splash rail (Kelly Nehowig).



Approaching the Wooden Outboard Utility Wreck from the stern. The object inside the hull is the large rock. The mechanical breaking system is forward of the rock, mostly buried (Mark Slick).



Looking from the port side toward the bow of the Wooden Outboard Utility Wreck (21-HE-491, Kelly Nehowig).

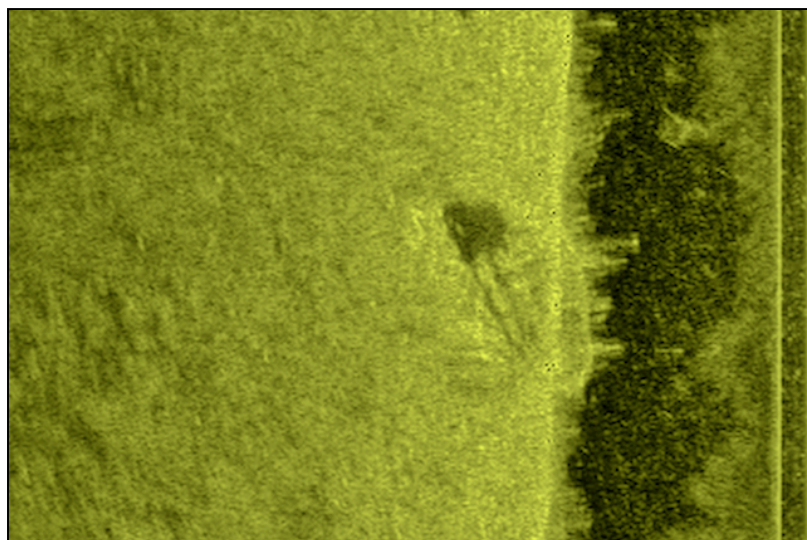


The foredeck cleared of zebra mussels. Slot headed woodscrews are clearly seen (Kelly Nehowig).

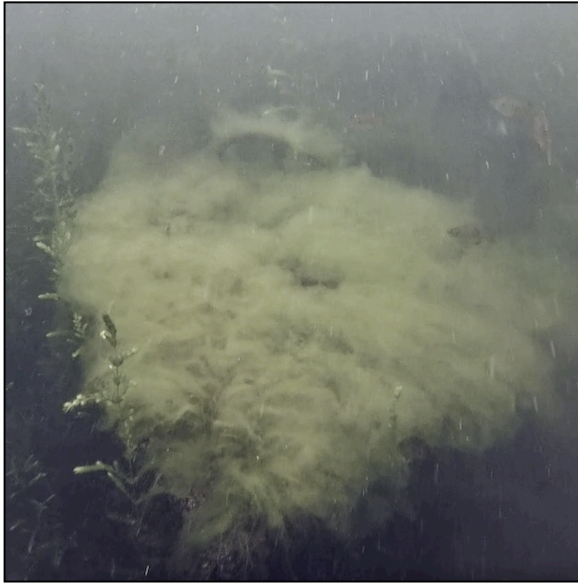
Wooden Inboard Utility Wreck Site (Anomaly 26.1)

The Wooden Inboard Utility Wreck (Anomaly 26.1), even though she lies in about 16 feet of water, is hard to discern in sonar footage because of her location. She lies in a small gully, and with the exception of early spring or late fall, she is entirely surrounded by tall weeds. MHM rudimentarily documented Anomaly 26.1 in mid-June 2016. The wreck is 14.30 feet long, is 5.30 feet in the beam amidships, and 3.60 feet wide transom. Her foredeck is intact and a navigation light is attached, and her steering wheel is attached to the dash. The windshield is gone, but one half of it is lying in the silt on the port side of the wreck near the bow. The gunwale is intact throughout, although the caprail is missing, and one half of the aft deck is in place with a small bit of the splashrail still attached to the starboard quarter. A mast light is lying on the aft deck. The doghouse is gone, but the engine is intact, and bases for front and rear seats are extant. In the bow, the steering wheel, its shaft, and the steering cables still exist. The most remarkable attribute of the Anomaly 26.1 site is the lack of hull planking. The only outer hull planking that survives is the transom and futtocks are seen along both the port and starboard sides; these supports hold up the forward deck and the gunwale. When constructed, the Wooden Inboard Utility Wreck had a plywood hull, formed of large plywood pieces instead of individual hull planks joined in either the lapstrake or carvel fashion. One small piece of the plywood hull is lying next to the wreck on the port side. Most often, vintage plywood utilities and runabouts would be fabricated from layers of mahogany.

The site is covered entirely in zebra mussels and at the time of MHM's investigation, a significant amount of green fauna. The construction date for the Wooden Inboard Utility Wreck is difficult to determine because of the site's condition, although MHM contends she is from the late 1940s to mid-1950s because of her design. Similarly, the sinking date of the wreck cannot be determined at this time because of the lack of a registration number, builder's plates, or model name. Therefore, Anomaly 26.1 cannot be assigned an archaeological site number without further historical - and possibly archaeological - research.



MHM's sonar image of the
Wooden Inboard Utility Wreck
(Anomaly 26.1).



The bow of the Wooden Inboard Utility Wreck (Anomaly 26.1) covered in slimy foliage (left, Mark Slick, above Kelly Nehowig).



The starboard side of the Wooden Inboard Utility Wreck (Anomaly 26.1) showing the missing hull planks (Mark Slick).



The steering wheel of the Wooden Outboard Utility Wreck (Anomaly 26.1, Kelly Nehowig).



The stern of the Wooden Outboard Utility Wreck (Anomaly 26.1, Mark Slick).

Update: *Doug Out* Wreck Site (21-HE-493)

MHM reported on the *Doug Out* Wreck (Anomaly 403) in the LMNA-5 Project Report in 2015⁵ and initially recorded a sonar image of the site during the LMS-1 Project in November 2011. The name of the wreck is derived from her actual name - *Doug Out* - was seen on the transom once silt was cleared away from the hull. The wreck is 16.00 feet long, 5.50 feet in the beam, and 4.00 feet at the transom. The purpose of revisiting Anomaly 403 in 2016 was to determine if the hull was constructed of fiberglass or aluminum. MHM reported in the LMNA-5 Project Report that the hull was fiberglass but this determination remained in question. Investigations during the LMNA-6 Project have determined that the hull is aluminum with slight indications of a faux lapstrake design. Further, manual probing into the silt on the port and starboard quarters of the wreck produced 2 Correct Craft step pads, and the inboard engine was identified as a Ford Interceptor.

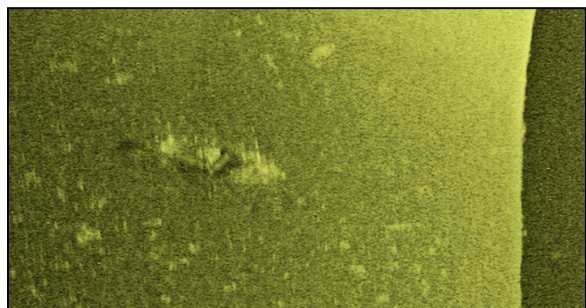
MHM made inquiries to the online Correct Craft Fan forum about the possibility that the company produced aluminum boats and provided links to underwater footage of *Doug Out*. After much discussion, the consensus of the forum members – including former employees of the company in the 1960s – is that *Doug Out* emulates a wooden Correct Craft Aqua Skier of the early 1950s. MHM considered, and the forum members suggested, that *Doug Out's* builder either fashioned an aluminum hull around a wooden Aqua Skier hull or simply placed Correct Craft step pads on an aluminum boat. Forum members informed MHM where to locate the Correct Craft builder's plate on the wreck to confirm the boat's identity; it was not found (Alison Bagley and Keith Bagley, personal communication, July, August, October 2016).

However, beginning in 1951 Correct Craft constructed aluminum boats for the US Army, including 19-foot bridge erection boats; Higgins constructed a 27-foot version (Hall 1951, 85). In addition, Correct Craft offered an all-wood kit boat beginning in 1951 called the Skipper. The lines of the Skipper are a bit different than *Doug Out*, but a kit-builder could modify the system to accept an aluminum hull. In May 1952, Correct Craft began an Army contract to produce 220 aluminum boats, increasing their workforce and their number of yard buildings as a result. By September 1952, the Army Corps of Engineers ordered an additional 130 aluminum 19-foot boats with Gray Marine engines. In 1953 the company contracted to build 400 M-2 wooden assault boats for the Army and it was reported that Correct Craft had manufactured around 9,000 vessels for the military since the beginning of World War 2. In 1954 Correct Craft constructed 154 26-foot lifeboat style powerboats and 42 33-foot long utilities, a contract that brought the company \$1 million from the US Navy. In 1960 Correct Craft offered their fiberglass assault boat for sale to the general public as the Play 'N Ski Runabout outboard, touting that it was designed by the Army (*MotorBoating* 1951-1954, 1960).

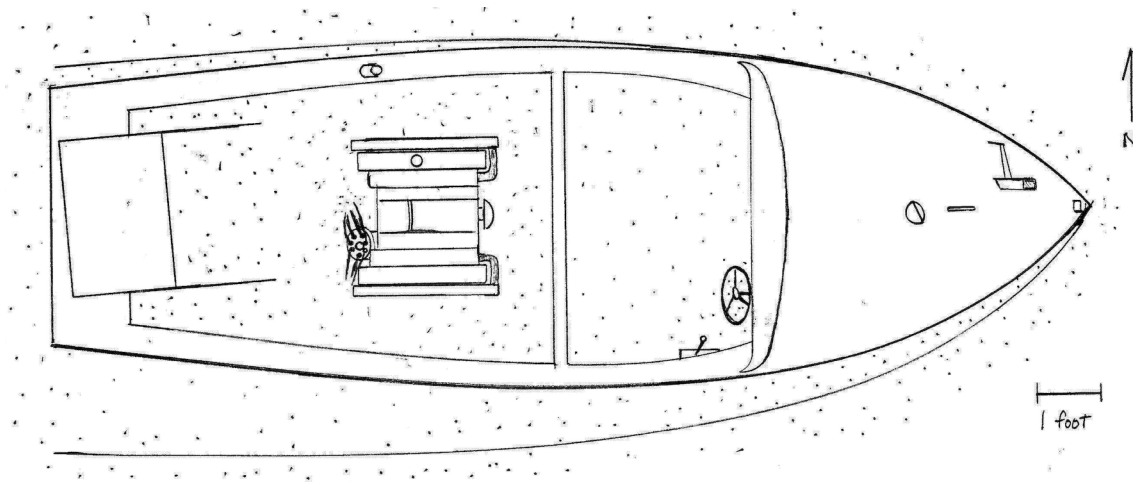
This synopsis of 'special' boats constructed by Correct Craft that fall outside of their typical and expected wooden utilities and runabouts serves to show that the company

⁵See MHM's LMNA-5 Project Report for detailed information.

had the ability, facilities, and knowledge to produce aluminum and fiberglass products in the early 1950s, as well as offering kit boats. The aluminum bridge erection boats are larger and formed differently than *Doug Out*, but since Correct Craft had the capability to construct aluminum boats at the time Anomaly 403 was built, she could be a one-off personal aluminum boat or a modified kit boat produced by the company.



MHM's sonar image of the *Doug Out* Wreck (21-HE-493).



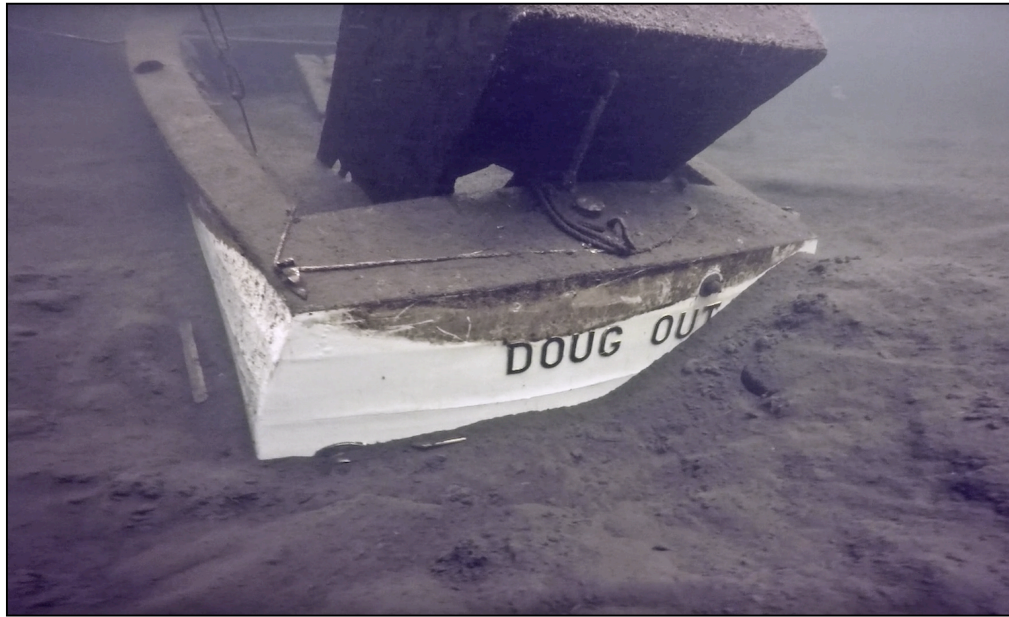
A sketch of the *Doug Out* Wreck (21-HE-493, Christopher Olson)



Left: *Doug Out* (Mark Slick).

Below: One of two Correct Craft Step Pads located in the silt next to Doug Out; the step pads were returned to the silt next to the wreck and re-buried (Mark Slick).





With some of the silt cleared away from the stern, the name *DOUG OUT* is visible and made of raised black letters (Mark Slick).



A 1952 aluminum Correct Craft Bridge Erector Boat constructed for the US Army (CorrectCraftFan.com).



A 1953 fiberglass Correct Craft Assault Boat constructed for the US Army (iBoats.com).



FOR A LIMITED TIME ONLY
SPECIAL OFFER AT THIS LOW PRICE
OUTBOARD
Play 'N Ski
RUNABOUT

A Correct Craft ad for the Play 'N Ski, formerly a US Army Assault Boat (Correct Craft Ad).

Twin Motor Cabin Cruiser Wreck Site (21-HE-492)

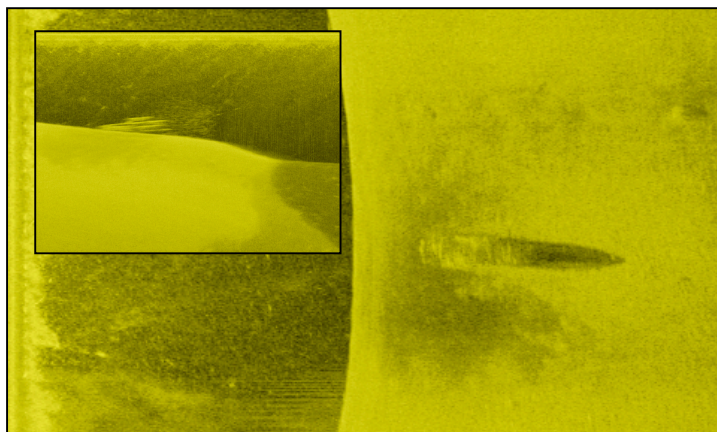
MHM recorded a sonar image of the Twin Motor Cabin Cruiser Wreck (Anomaly 22.1) during the LMS-1 Project in November 2011, and identified the site in early June 2016. The anomaly was not a priority for MHM to investigate archaeologically because the initial sonar signature of the wreck was obscured by the acoustical shadow of the hill the vessel lies upon. The wreck is 22.50 feet long with a 7.50-foot beam, is 7.0 feet at the transom, and has a 4.50-foot depth of hold. Her hull is wood and was constructed with cold molded diagonal planking. This boat-building technique is not often seen archaeologically and is a significant attribute of Anomaly 22.1. The outer hull planks rake aft and the hull is double-planked; however, it could not be determined during this initial investigation if the inner hull planks rake forward diagonally or run longitudinally. Two elongated oval portholes are located port and starboard just under the gunwale. Port and starboard splash rails are attached to the hull near the turn of the bilge and run from the stern to amidships. A rubrail is attached to the gunwale and a section of it has detached from the hull and lies in the silt on the port side forward. She has a cabin with 4 windows (one pane of window glass is missing) whose walls extend aft and taper to the transom along the gunwale. The transom was constructed specifically to accommodate twin outboard motors, and 2 1960-1962 Mercury Merc 400 45hp motors are still attached to the wreck. Two red battery boxes containing 12 volt batteries are located on the inner port and starboard stern quarters, stored in built-in deck boxes, and a red gas tank is lying on the deck. Two white controllers are located on the starboard side of the wreck just aft of the exterior cabin wall, and the detached steering wheel lies on the deck. The captain's chair is folded in its stowed position. A raised longitudinal deck plank is seen on the bow and it extends both port and starboard on the gunwale, resembling an arrow. A small hole on the foredeck at the bow indicates the location of a missing navigation light. One metal chock survives on the port side bow gunwale, but it is missing from the starboard side. A round hole on the starboard bow surrounded by a metal ring likely held a bow light. The missing metal fittings were probably removed illegally from the wreck sometime in the past. MHM came to this conclusion since during the wrecking process, the metal fittings would not have separated from the boat and since she was not scuttled, she was not stripped prior to sinking. The Twin Motor Cabin Cruiser Wreck is painted white and there is a small hole in the cabin roof, probably from an anchor, between 2 rails that would be used to tie-down a dinghy. The cabin is out-fitted rather crudely and does not appear to have been designed for comfort – with the exception of the presence of a toilet, complete with ventilation tubes that protrude out of the port side gunwale next to the cabin. A corresponding hole exists on the starboard side gunwale as well, but there is no tube coming out of it.

An interesting aspect of the Anomaly 22.1 site is the fact that the wreck is still attached to her trailer. Different theories exist as to why a boat on a trailer is resting on the bottom of Lake Minnetonka.⁶ Two explanations make sense, and 1 of them does not fit

⁶Staff at the SCUBA Center, the dive shop MHM patronizes in Minneapolis, has related other, more fanciful theories as to how the Twin Motor Cabin Cruiser Wreck sank. One story contends that the owner did not remove the trailer from the boat because there was no parking space for it. Another story states that the owner wanted an amphibious boat or he did not know that a boat cannot function on the water still attached to its trailer.

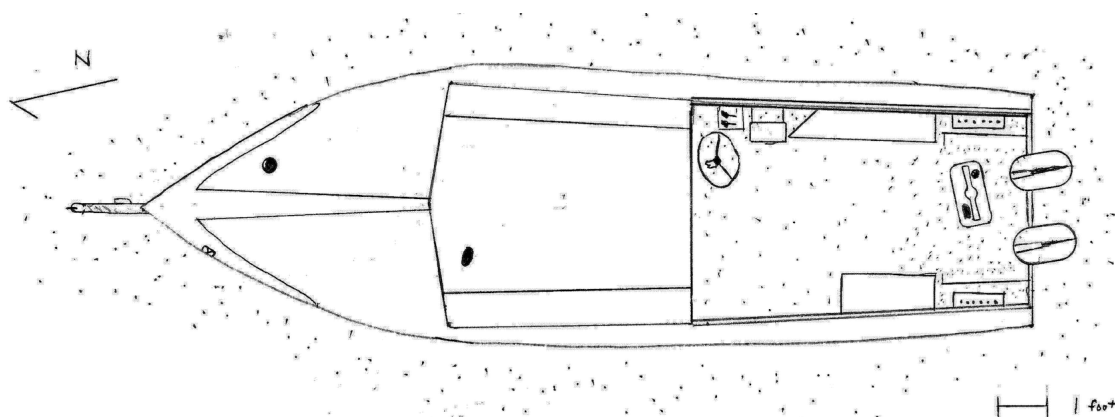
with the location of the wreck. As with other wheeled vehicles on the lake bottom, it has been suggested that the boat was being transported across the ice in winter. The only launch ramps in the area are on the same shoreline and are connected by a road; considering the wreck's location, there is no reason to transport a boat across the lake in winter since the nearby roads supply a safe and efficient route around the lake. The second, and more likely wrecking process for Anomaly 22.1 was a simple launching error; the boat's owner did not have the trailer secured to the trailer hitch on the motor vehicle either during launching or when pulling the boat out of the water. MHM contends the mistake occurred during launching; evidence exists that the boat owner attempted to halt the trailer's entrance into the water as indicated by a rope looped through the trailer's winch strap and attached to the trailer tongue. MHM also suggests the drain plug was not inserted in the transom. These factors, combined with the weight of the trailer, allowed the boat to float at or near the water's surface for 1/2 mile before she sank entirely.

Anomaly 22.1's registration number is MN 3018 AJ, a number assigned by the State of Minnesota in 1959. In the historical record, this license number is associated with a 1965 Lund boat that was registered as late as 1991 (John Nordby, personal communication, June 2016). MHM has identified 2 other wrecks on the bottom of Lake Minnetonka with duplicate registration numbers.⁷ Further, there is only a coating of silt in the wreck's hull that indicates sediment does not drop out of the water column readily as it moves toward the Grays Bay outlet. When compared to another site nearby, this characteristic holds true for both wrecks. In order to approximate the sinking date of the Twin Motor Cabin Cruiser Wreck, MHM considered the design of the cabin cruiser (late 1940s-early 1950s), the construction date of the outboard motors (1960-1962), the lack of a year validation sticker next to the registration number (a procedure that began in 1962), and the re-use of the vessel's license number in 1965. Therefore, MHM is certain Anomaly 22.1 sank in or before 1965 (possibly prior to 1962) but not before 1960. MHM submitted an archaeological site form for the Twin Motor Cabin Cruiser Wreck to the OSA in late September 2016 and received her site number, 21-HE-492, at that time.



MHM's sonar images of the Twin Motor Cabin Cruiser Wreck (21-HE-492).

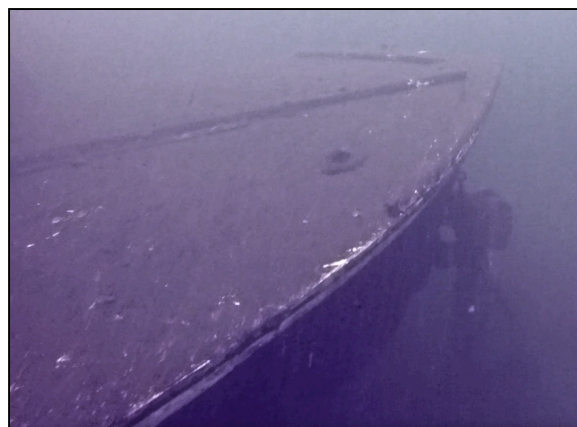
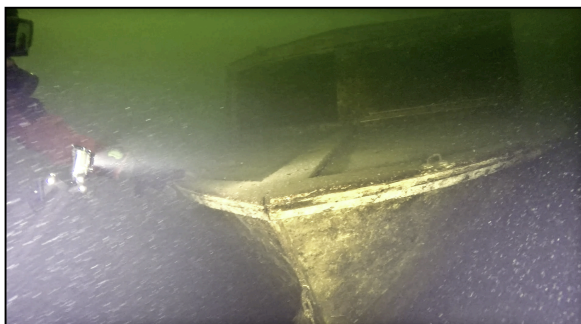
⁷See MHM's *LMNA-4 Project Report* for more information on the Correct Craft Utility Wreck (21-HE-467) and the Wooden Motor Boat Wreck (Anomaly 467).



A sketch of the Twin Motor Cabin Cruiser Wreck (21-HE-492, Christopher Olson).



The starboard side forward of the Twin Motor Cabin Cruiser Wreck (Mark Slick).



Two views of the bow of the Twin Motor Cabin Cruiser Wreck (21-HE-492, Mark Slick).



The port bow of showing the registration number MN 3018 AJ (Mark Slick).



The trailer tongue and winch showing a line winding around the mechanism that MHM contends the owner used to attempt to save his boat; he failed. Notice the diagonal markings that rake aft on the bow - the cold molded diagonal planking. See another section of the cold molded diagonal planking below (Mark Slick).



The starboard stern quarter showing the gunwale, rub rail, splash rail, and the cold molded diagonal planking can just barely be seen (Mark Slick).



The stern with the twin Mercury Merc 400 45hp outboard motors (Mark Slick).



The displaced steering wheel and controller of 21-HE-492 (Mark Slick).

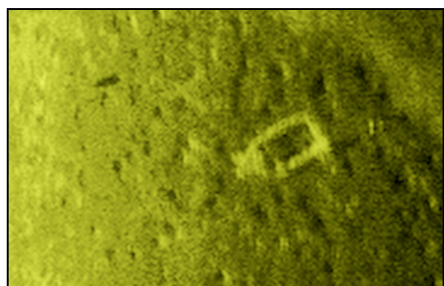


The interior of the Twin Motor Cabin Cruiser Wreck (21-HE-492, Mark Slick).

Small Utility Wreck Site (Anomaly 601)

MHM recorded a sonar image of Anomaly 601 during the LMS-2 Project in May 2012. In mid-July 2016 it was determined the anomaly is – seemingly (see below) – an aluminum wreck and in early August, MHM investigated the anomaly more thoroughly. The wreck lies in shallow water, but nonetheless is in zero visibility conditions. MHM volunteer Mark Slick likened diving on the wreck to "peering through dirty milk". The wreck is 13.80 feet long and 4.80 feet in the beam. By feel, it was determined that Anomaly 601 has a foredeck and intact gunwale, 2 oarlocks are located amidships on both the port and starboard gunwales, and frames are located on the inner hull. There is a bench seat with a canvas-covered back and steering wheel extant, and the windshield is lying in the silt next to the wreck's starboard bow. The transom stern is designed to carry an outboard motor that is now missing, a battery is located in the starboard quarter, and a concrete block is located amidships aft. The only useable images produced during MHM's investigation of Anomaly 601 are recorded in a brief video of the steering wheel among many minutes of digital footage.

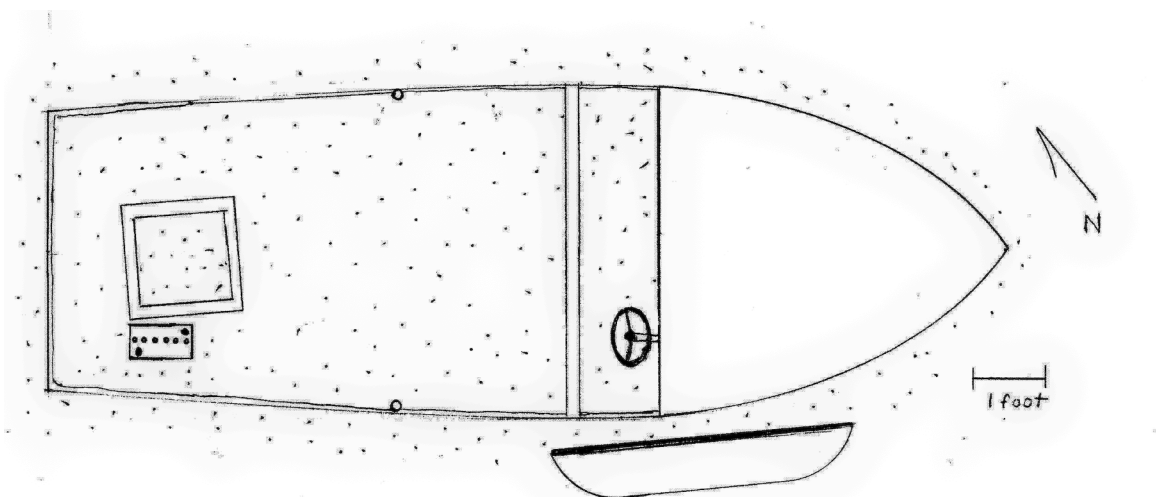
Using a 'Brody Bag'⁸, MHM's Olson was able to determine a partial registration number on the wreck's starboard bow: MN 209_ BE with the fourth number missing. The 'BE' span of licenses was issued in 1962; this date does not date the wreck, but it indicates the boat was registered in Minnesota that year. MHM contacted the DNR and in the series of numbers 2090-2099, only 3 were present in the surviving registration records from 1972 forward: a 12-foot homemade wooden boat from 1955, a 12-foot Larson from 1920⁹, and a 1960 14-foot Herters boat (John Nordby, personal communication, September 2016). Of these 3 choices, only the Herters - a brand from Waseca, MN - could be Anomaly 601. Many Herters boats were manufactured from fiberglass, sheathed in chrome, and strengthened with aluminum frames. Therefore, Anomaly 601 may be a Herters vessel, but this cannot be proven - or disproven - at this time. MHM plans to re-visit the site in the future to acquire more information and to investigate the port bow for a registration number. The Small Utility Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



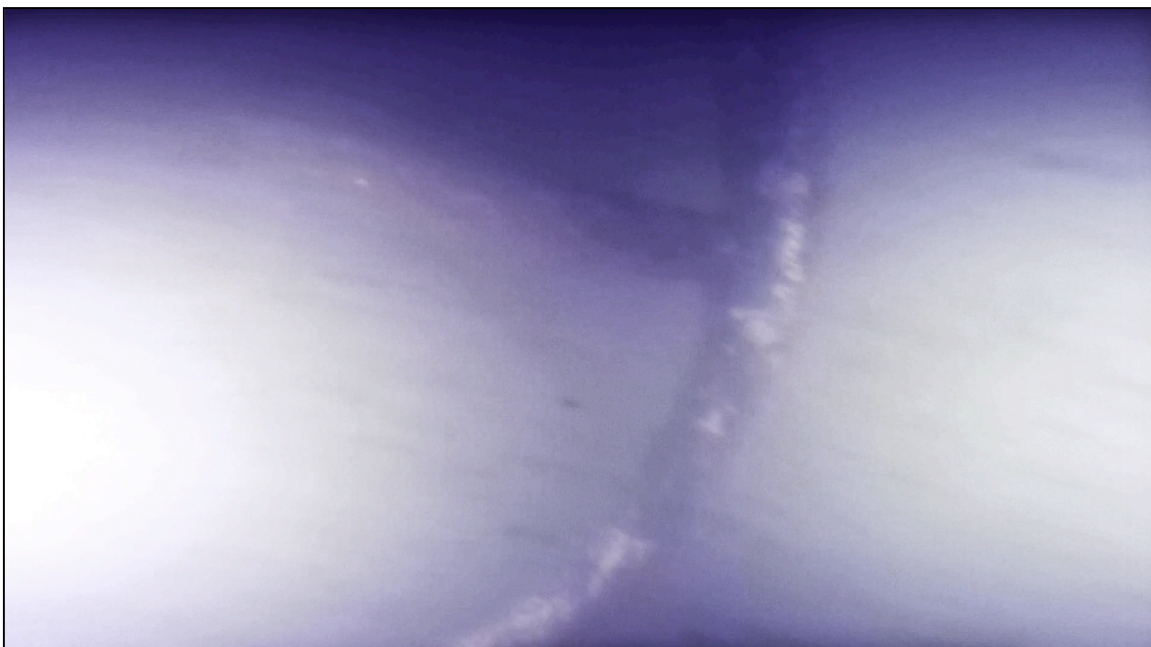
MHM's sonar image of the Small Utility Wreck (Anomaly 601).

⁸A Brody Bag is a clear plastic bag filled with fresh clean water. When first developed by Steve Brody, at that time a staff member of East Carolina University's Dive Safety Office, a glow stick inside the bag would light up the clear water. In MHM's experience, a strong dive light shone through the water while the diver presses their facemask against the bag, is very effective.

⁹The date of the 1920 Larson must be brought into question since the boat would have been on the water for 52 years in 1972.



A sketch of the Small Utility Wreck (Anomaly 601, Christopher Olson).

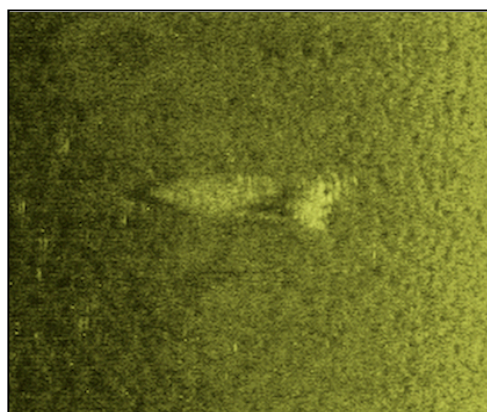


Part of the Steering wheel of the Small Utility Wreck; this is the only recognizable image that could be recorded on the wreck site (Mark Slick).

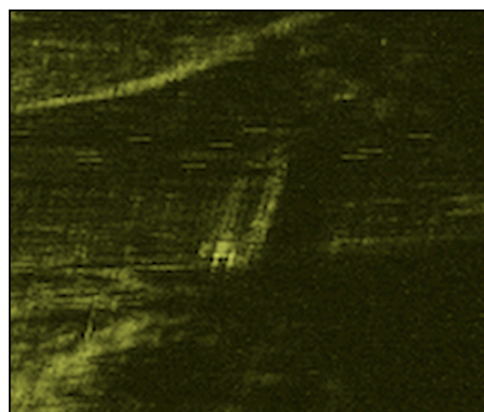
Burned Fiberglass Composite Wreck Site (Anomaly 600)

MHM recorded a sonar image of Anomaly 600 during the LMS-2 Project in May 2012. In mid-June 2016 it was determined the anomaly is an inboard/outboard fiberglass boat with a wooden core – composite construction – that has burned to the waterline. Currently the hull measures 17.80 feet long and 7.80 feet in the beam; the length of the hull at the deck level was at least 19.00 feet long when she was constructed. The engine's outdrive is intact, extends beyond the hull, and is partially buried in the silt. The straight-line 4-cylinder engine is located at the stern, is completely exposed but

detached, and tilts to starboard. The wreck's wiring is seen throughout Anomaly 600, most of it frayed and scorched. The remains of the hull's edges are uneven, evidence of where the flames were extinguished. Long fiberglass threads, remnants of the fire, are seen throughout the wreck where the inner layer of fiberglass burned. However, at the port quarter, the inner fiberglass layer is entirely gone and the inside wood core is extant, checked and burned black. The bow is still pointed, but only extends about 6 inches from the keel on both port and starboard. What appears to be the keelson begins at the bow and it continues aft. The transom stern is nearly intact on the port side with the trailer strap U-bolt extant near where the gunwale should be. The gunwale has not survived anywhere on the wreck, but a section of it appears to be lying in the silt beyond the starboard stern along with 2 other substantial pieces of hull; one has an unburned rope tied to it. MHM contends an explosion destroyed the Burned Fiberglass Composite Wreck as evidenced by the wreck's burned condition and the location of the unburned hull pieces off of the vessel. One undamaged piece is a section of the gunwale that seemingly blew off the wreck and sank off the stern. MHM supports the contention that Anomaly 600 is the 19-foot runabout whose fuel exploded from a flooded carburetor in early July 1965 (*Deephaven Argus* 1965). The Burned Fiberglass Composite Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



MHM's sonar images of the Burned Fiberglass Composite Wreck. Anomaly 600 is a good example of the difference in appearance of a scanned submerged cultural resource depending on the conditions.



The remains of the bow of the Burned Fiberglass Composite Wreck (Mark Slick).



The starboard quarter of Anomaly 601 (Mark Slick).



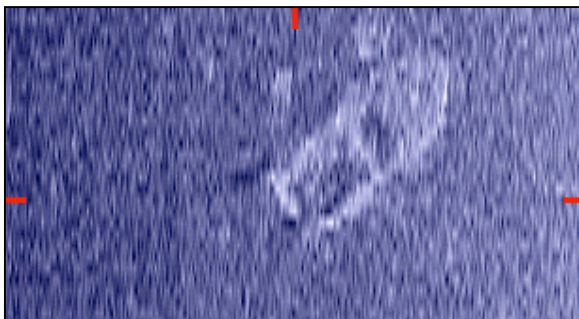
The port quarter of Anomaly 601. The inner transom (above) is comprised of exposed wood and the outer transom fiberglass is intact, along with the tie-down U-bolt (Mark Slick).



Update: Owens Twin Sport Wreck Site (Anomaly 91)

MHM recorded a sonar image of Anomaly 91 in May 2012 during the LMS-2 Project and identified the wreck as a 1959-1960 Owens Landau during the LMNA-1 Project.¹⁰ However, subsequent research and investigations have led MHM to determine the wreck is a 1959-1960 Owens Twin Sport. MHM returned to the wreck during the LMNA-6 Project in a second attempt to locate the registration number. In mid-July 2016 MHM cleared away enough silt from both the port and starboard bow to reveal the number MN 7072 EU with a 1989 license sticker. The hull information was confirmed with the DNR and their records list the Owen's build date as 1960 (John Nordby, personal communication, August 2016). The EU letter sequence dates to the mid-1980s, indicating the wreck's initial 1960 registration either was not in Minnesota or the license lapsed at some point. Some local SCUBA divers who have visited the wreck have contended she sank during the 1965 Lake Minnetonka tornadoes. The data collected during the LMNA-6 Project adds context to Anomaly 91 and disproves this theory. Further, this wreck becomes a tool that MHM can use for the on-going sediment build-up project since she sank after 1987, the first year the 1989 sticker was valid. The Owens Twin Sport Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.

¹⁰See MHM's *LMS-2 Project Report* and *LMNA-1 Project Report* for more information on the Owens Twin Sport Wreck.



MHM's sonar image of Anomaly 91.



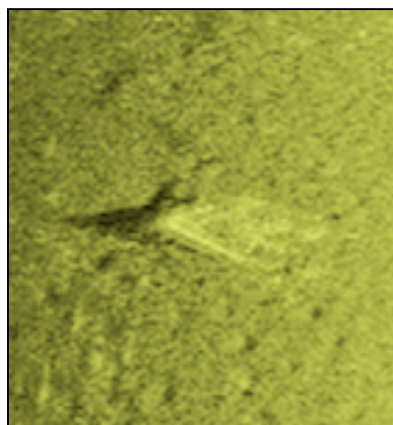
1960 Owens Twin Sport (Owens 1960).



The bow of the Owens Twin Sport Wreck is flared outward, obscuring the registration number – MN 7072 EU [1989 year sticker], even with the silt moved away (Mark Slick).

Damaged Outboard Fiberglass Wreck Site (Anomaly 585)

MHM recorded a sonar image of Anomaly 585 in May 2012 during the LMS-2 Project and identified the site in mid-June 2016. The wreck is partially destroyed and covered in zebra mussels, but many details can be ascertained. The fiberglass remains are white, 16.30 feet long, and the transom stern is 6.50 feet wide with a motor well. The port quarter of the wreck is intact to amidships, including the outer edge of the gunwale; at the stern the gunwale is completely intact. The starboard quarter gunwale exists but the caprail is missing and the outer edge of the gunwale extends far forward. The starboard side bow just beyond the turn of the bilge and hull bottom exist but are fragmentary, and the majority of the port side forward has been destroyed. The outboard motor is missing and the brand and model of the Damaged Outboard Fiberglass Wreck cannot be determined. Anomaly 585 cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



MHM's sonar image of the Damaged Fiberglass Wreck (Anomaly 585).



The port quarter and stern of Anomaly 585 (Mark Slick).

Fiberglass Sailboat Wreck Site (Anomaly 595)

MHM recorded a sonar image of Anomaly 595 in September 2011 during the LMS-1 Project and identified the site in mid-June 2016. The Fiberglass Sailboat Wreck is the first of this identified by MHM on the lake bottom. The wreck is 13.20 feet long, 5.10 feet in the beam at her widest amidships, and 3.80 feet in the stern. The hull is white, the bow is pointed, and the stern is square, with a centerboard trunk running longitudinally down the centerline. The rudder post is visible at the stern. The gunwale is wide on port, starboard, and at the stern. A small deck covered in thin wood is located at the open end of the cockpit and the floor is also covered in wood. The mast hole is on the after edge of the foredeck. The registration number 1076 CS is located on both the port and starboard bow, visible on round white sailboat/canoe stickers with a graphic of Minnesota. In the DNR records, license number 1076 CS is recorded as a 1974 13-foot Larson (John Nordby, personal communication, June 2016). However, no identifying logos were found on the wreck and the only Larson sailboats located in the historical record are 16-foot M-scows that are very similar to Anomaly 595. A round Deeplaven dock sticker is also found on the starboard bow; unfortunately the City of Deeplaven has not archived the boating records from the 1970s (Deborah Hicks, personal communication, October 2016). MHM contends Anomaly 595 was intentionally scuttled (around 1978) because of the lack of fittings, rudder, mast, and the large hole on the port side hull. Whether the hole was made during a collision or to sink the vessel is unknown. The Fiberglass Sailboat Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



Above: MHM's sonar image of the Fiberglass Sailboat Wreck (Anomaly 595).

Right: Anomaly 595 looking to the bow from the starboard side.



Bottom Left: The port side bow hole is seen through the deck.

Bottom Right: The boat's dock and registration stickers.

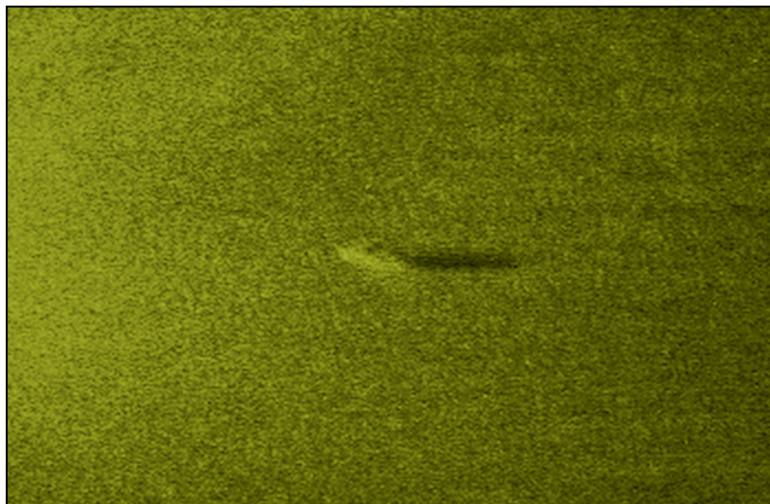
Photos by Kelly Nehowig.



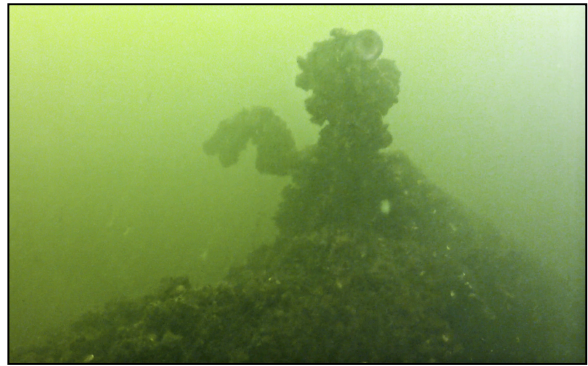
Spirit Marine Wetbike Wreck Site (Anomaly 629)

MHM recorded a sonar image of Anomaly 629 in November 2011 during the LMS-1 Project and identified the site as a Spirit Marine Wetbike Wreck in mid-August 2016. Anomaly 629 is 6.90 feet long and 2.20 feet wide, although these numbers are approximate due to the thick layer of zebra mussels that cover the Wetbike completely. Some mussels were removed and it was determined the body of Anomaly 629 is blue with white details and the logo 'WETBIKE' is seen between the handlebars. The seat cushion that is attached to the engine compartment is missing, along with the compartment's lid.

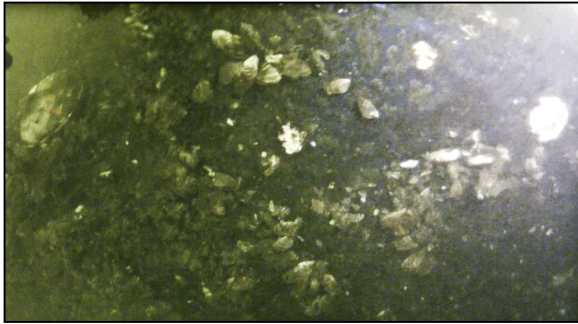
The Spirit Marine Wetbike was produced by Arctic Enterprises (now Arctic Cat) of Thief River Falls, MN. A prototype Wetbike was advertised in 1976, referred to as a "Marine Motorcycle...that rides on the water on skis" (Schieffelin 1976, 28). James Bond not only rode the prototype Wetbike in *The Spy Who Loved Me* in 1977, he assembled it after its parts emerged from a large duffle bag. The Wetbike became the third commercially available personal watercraft on the market in 1978, behind the Sea Doo in 1968 and Jet Ski in 1973. Police have used Wetbikes to chase thieves in powerboats on *CHiPS* in 1982 and *Police Academy 3* in 1986, while bad guys used them to transport drugs in *Red Surf* in 1990. Production of Wetbikes ceased in 1992 (Hemmel 2015; Moraitis, ND; Pacific PWC ND, 142-143; Vintage Sea Doo Website, ND). At this time it cannot be determined what year Anomaly 629 was manufactured, although MHM contends it was 1991 or earlier since it does not resemble the 1992 model. More research is needed to answer questions about the Wetbike, including its specific construction year, the year of sinking, and its Minnesota registration number if it has one. These tasks might be accomplished with another site visit and the removal of zebra mussels. The Spirit Marine Wetbike Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



MHM's sonar image of the Spirit Marine Wetbike Wreck (Anomaly 629).



Images of the Spirit Marine Wetbike show the profuse amount of zebra mussels covering the wreck (above and bottom left, MHM, bottom right, Josh Knutson).

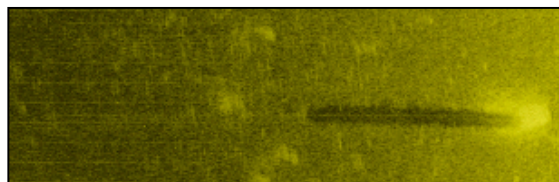


James Bond riding the Wetbike he assembled. Without instructions. On a ship.

Update: Anomaly 608 and the Marine Launch Boilers Site (21-HE-421)

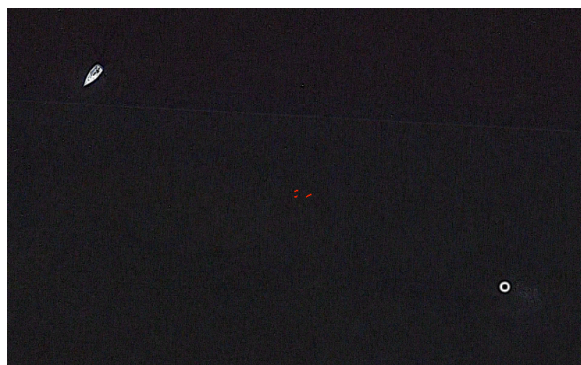
MHM reported on the Marine Launch Boilers Site (21-HE-421) in 2013.¹¹ The original site consists of 3 marine launch boilers that are 3 feet in diameter and 8, 10, and 12 feet long respectively. MHM recorded a sonar image of Anomaly 608 in September 2011 during the LMS-1 Project and identified it as a marine launch boiler in mid-July 2016. Given the proximity of Anomaly 608 to the Marine Launch Boilers Site - 261 feet - it is appropriate to extend the already-established site to encompass it. Anomaly 608 is standing vertically in the water column with its firebox end in the silt. It stands 10.50 feet tall, there is at least 3 feet still buried, and it is 4.10 feet in diameter. Anomaly 608's smoke pipe – the rectangular opening that accommodated the smoke stack on the top of the boiler – measures 2.00 feet by 1.50 feet. The context of the Marine Launch Boilers Site – a large suburban lake that was plied by a variety of steamers under 300 feet long – indicates they likely powered 4 of the medium-sized steam launches in the 1880s-1910s. Depending on wear and tear, marine boilers would often be replaced by newer models or a steamer would be converted to internal combustion, replacing the steam power plant entirely, or the machinery (boilers and engines) would be recycled out of vessels that were being dismantled. There is evidence of these activities in the historical record pertaining to Lake Minnetonka, including those of the Twin City Rapid Transit Company during the dismantling of the steamers *Minneapolis*, *St. Paul*, *Minnetonka*, *Puritan*, *Plymouth*, and *Mayflower* (TCRT 1905-1909).

Of the 4 marine launch boilers, Anomaly 608 is the largest of them, suggesting it was used in a larger steamboat than the others. Like the other boilers, Anomaly 608 is a fire tube boiler. The majority of steamers on Lake Minnetonka used fire tube boilers, although there are six notable exceptions to this generally held-rule – the Lake Minnetonka Streetcar Boats *Como*, *Harriet*, *Hopkins*, *Minnehaha*, *Stillwater*, and *White Bear* carried the Roberts Safety Water Tube Boiler developed in 1902 in Chicago (Hield 1910, 2). MHM suggests that these were taken out of vessels for recycling, possibly for re-selling for use as power plants on other steamers or in a building, or to be sold for their scrap value as a load of heavy steel. The site's location suggests the boiler cargo was being transported on a barge when they were accidentally dumped overboard, possibly in high wind and waves. The destination for the boilers might have been the Excelsior Park Minneapolis and St. Louis Railway Station on Gideon Bay where the boilers could have been loaded onto a railcar to their next destination. This is MHM's preferred theory since it was not cheap or easy to remove boilers from steamboats in terms of labor costs, the equipment required, and the use of a tug and barge to transport them. MHM submitted an archaeological site form update for the Marine Launch Boilers Site to the OSA in October 2016.



MHM's sonar image of the fourth boiler in the Marine Launch Boilers (Anomaly 608).

¹¹See MHM's *LMNA-2 Project Report* for more information on the Marine Launch Boilers Site (21-HE-421).



This satellite photograph of Lake Minnetonka was taken above the Marine Launch Boilers Site. The red lines are the 3 original marine launch boilers and the white circle is Anomaly 608. For scale, the boat to the upper left is about 25 feet long. Anomaly 608 is 263 feet from the furthest of the other 3 boilers.

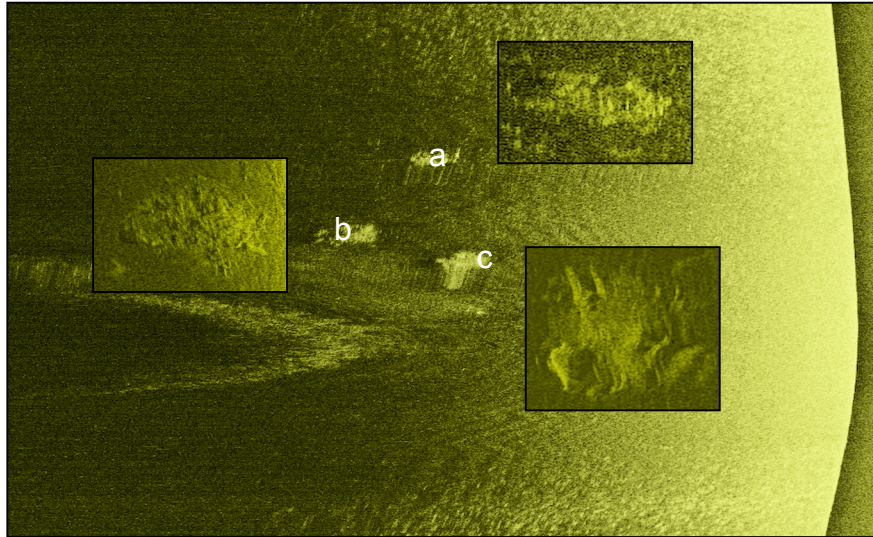


Anomaly 608 stand nearly straight in the water column; with the limited visibility, the boiler does not fit completely into the photographic frame (Kelly Nehowig).

Fire Rubble Site (Anomaly 8.1a-c)

In November 2011, MHM recorded a sonar image of 3 irregularly shaped objects in during the LMS-1 Project. Anomaly 8.1a-c was identified as rubble piles, primarily comprised of metal, ceramic, and wood artifacts of various types in mid-July 2016. Recognizable artifacts in the pile designated as Anomaly 8.1a include a section of a steamboat smokestack, a metal frame or railing, and the end of a large cylindrical tank. The tank end has a oval hatch that suggests it could come from a steam boiler, but the metal wall is rather thin and this is unlikely. The tank probably held water. Anomaly 8.1b consists of metal pipes, heating grates with louvers, girders, and a rectangular box. The metal frame if a cart or wagon with wooden spoke wheels stands out in the artifacts that make up Anomaly 8.1c, along with a boiler, rectangular box, and round containers. Ceramic artifacts are evident in 8.1c, including a white coffee cup with a blue stripe and large round containers. The piles lie in a rectangle on the lake bottom; 8.1a is 100 feet to the northeast of 8.1b, 8.1c is 38 feet southeast of 8.1b, and 8.1c is 117 feet to the southwest of 8.1a. MHM contends Anomaly 8.1a-c is the remains of a fire – primarily

metal that does not burn – that destroyed the Lafayette Hotel in 1897 or the Lafayette Club in 1922. At this point it cannot be determined through the style of the artifacts which fire produced the anomaly; with further research this question might be answered. The Fire Rubble Site is a protected submerged cultural resource.



MHM's sonar images of the Fire Rubble Site (Anomaly 8.1a-c).



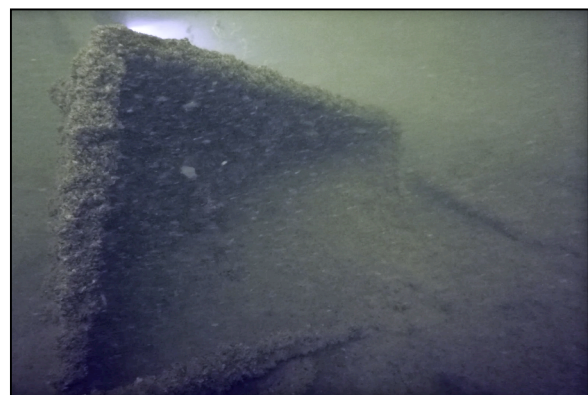
A section of a smokestack in A8.1a (MHM).



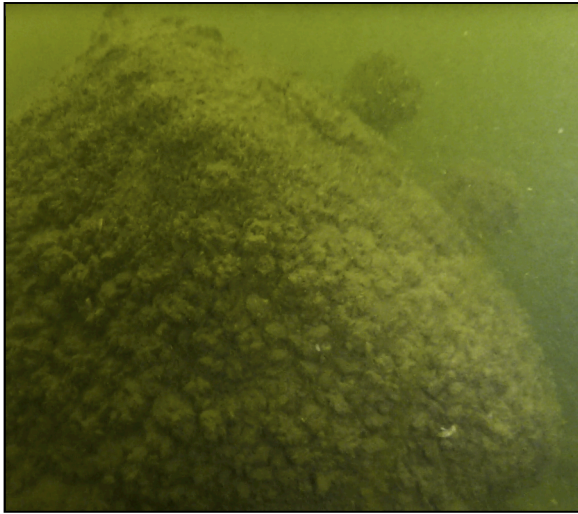
One end of a water tank in A8.1a (MHM).



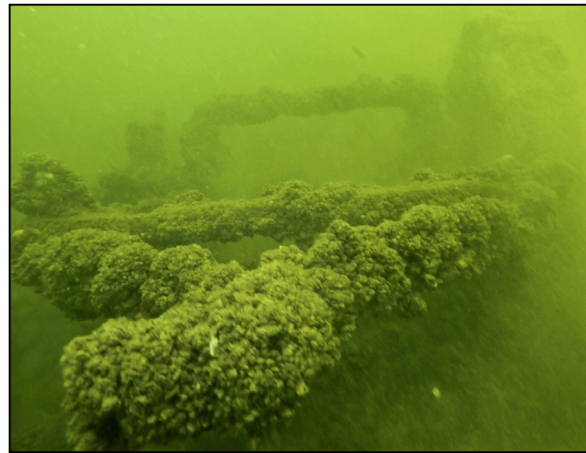
A heating grate in A8.1b (Mark Slick).



A box in A8.1b (Mark Slick).



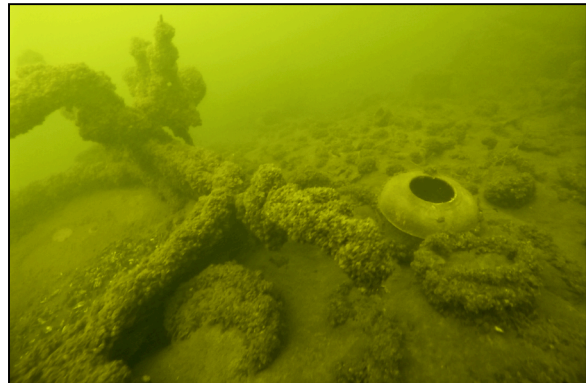
The boiler in A8.1c (MHM).



The cart in A8.1c (Kelly Nehowig).



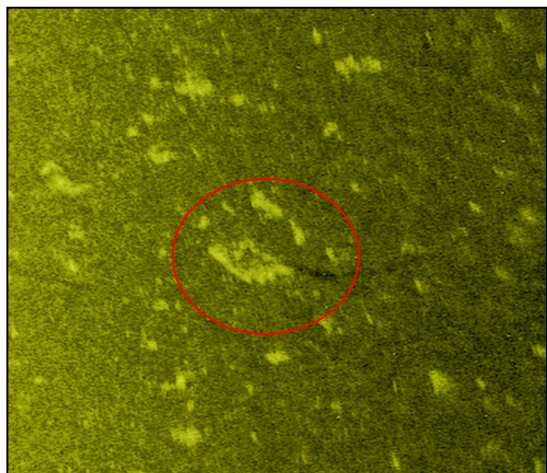
One of the wheels of the cart in A8.1c (Kelly Nehowig).



Other objects next to the cart in A8.1c (Kelly Nehowig).

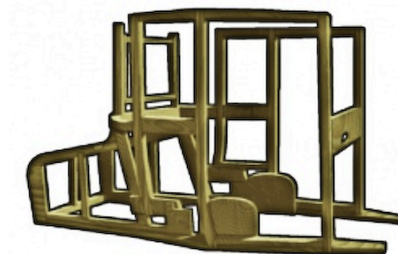
Ford Model T Coupe Wooden Frame Site (Anomaly 78)

MHM recorded a sonar image of the Anomaly 78 during the LMS-2 Project in May 2012 and identified the site in late July 2016. It measures 7.40 feet by 4.40 feet and rises 3.00 feet off the lake bottom, with part of the site buried in silt. Anomaly 78 is the wooden superstructure of a Model T Ford Coupe with a variety of metal attributes attached to it. Anomaly 78 lies on its side, with the dashboard, windshield frame, and hinge for the front passenger standard design (not suicide) door evident. Ford produced the Model T Coupe for several years (1909-1912 and 1917-1927, McCalley 1994), but standard doors were introduced in late 1923. Therefore, Anomaly 78 was manufactured between 1923-1927, but its sinking date cannot be determined at this time. The Ford Model T Coupe Frame Site is a protected submerged cultural resource.



Left: MHM's sonar image of the Ford Model T Coupe Frame Site.

Below: A Ford Model T Coupe Wooden Frame that is sold for restorations or replicas (www.macsautoparts.com).

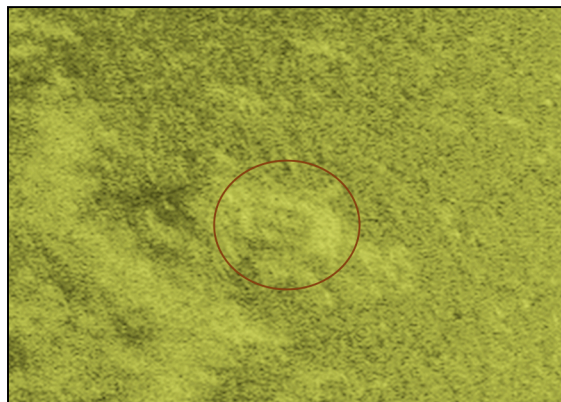


Above: The front of the Ford Model T Coupe Wooden Frame (Mark Slick).

Left: The rear of Anomaly 78 (Mark Slick).

Ford Model T Touring Car Body Site (Anomaly 642)

MHM recorded a sonar image of the Anomaly 642 during the LMS-2 Project in May 2012 and identified the site in early September 2016. It measures 8.10 feet long, is 4.20 feet at the back, and 3.00 feet at the front. Anomaly 642 is a Model T Ford Touring Car Body with 4 doors. Ford produced 2, 3, and 4 door Model T Touring Cars between 1909-1927; Anomaly 642 with its 4 doors was manufactured in 1926-1927 (McCalley 1994). However, like Anomaly 78, the sinking date of Anomaly 642 cannot be determined at this time. Much discussion about the nature of Anomaly 642 has taken place between MHM staff, volunteers, and interested social media participants. One theory put forward by MHM volunteers is the possibility that the site was a horse-drawn sleigh. This identification was a strong possibility, but now MHM is confident the site is a car. The Ford Model T Touring Car Body Site is a protected submerged cultural resource.

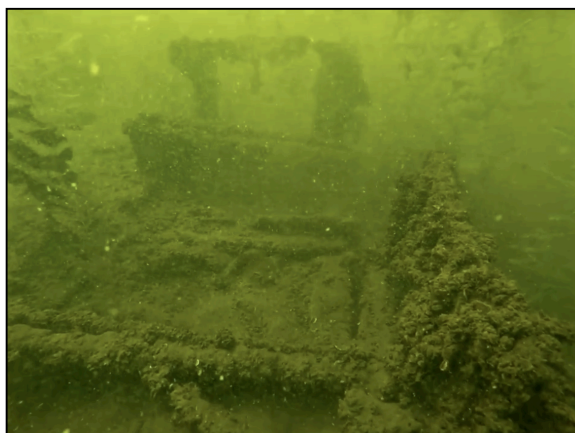


Left: MHM's sonar image of the Ford Model T Touring Car Body Site

Below: A Touring Car Body (www.killbillet.com).



Toward the front of Anomaly 642 (Kelly Nehowig).

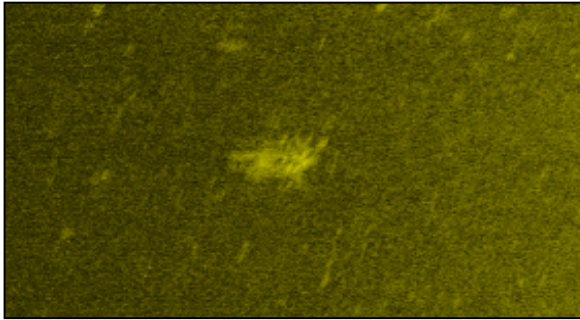


Looking toward the front of the Anomaly 642 (Kelly Nehowig).

Overturned 1938 Ford DeLuxe Roadster Site (Anomaly 209)

MHM recorded a sonar image of Anomaly 209 during the LMS-1 Project in September 2011 and identified the site as an overturned vehicle in mid-August 2016. The car is 14.40 feet long and 6.10 feet wide. The undercarriage (frame) with many attributes and the wheels are visible. The rear bumper with a trailer hitch is completely exposed and remnants of red and white alternating stripe tape is evident; this tape augmented the small brake lights. Two rubber boots can be seen where the bumper mount passes through the body and attaches to the frame on both sides of the car. One exhaust pipe, the front and rear axles and suspension system, a rear leaf spring, and both running boards are extant. All four tires protrude from the silt but the front ones are partially buried along with the front of the car that is buried in about 6 inches of silt. The car has two different types of V8 dog dish hubcaps that are diagnostic attributes of the site. The hubcaps have a distinctive V8 logo impressed onto them that was used between 1933-1938. The rear driver's side hubcap's center is painted white and has a flanged base that terminates in a round black ring. The rear passenger's side hubcap has a white button-like center with a larger round black ring as a base – this hubcap was specifically used on the 1938 Ford DeLuxe Roadster. The bumper brackets are also diagnostic of the Roadster, and if the car was upright, it probably has a rumble seat as well (David

Olson, personal communication, October 2016). A Ford car packed with tools belonging to a local resident fell through the ice south of Gale Island, but specific details and the year of sinking are unknown (Jeff Jensen, personal communication, October 2016). Anomaly 209 fell through lake ice sometime after 1938 and hit the lake bottom upside down and was subsequently buried in silt. The Overturned 1938 Ford Deluxe Roadster Site is a protected submerged cultural resource.



MHM's sonar image of the Overturned Ford Car Site.



The rear bumper of Anomaly 209 (MHM).



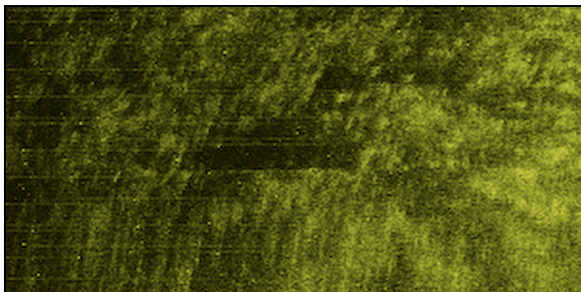
The V8 Dogdish Poverty Hubcaps of Anomaly 209 (MHM, Kelly Nehowig).



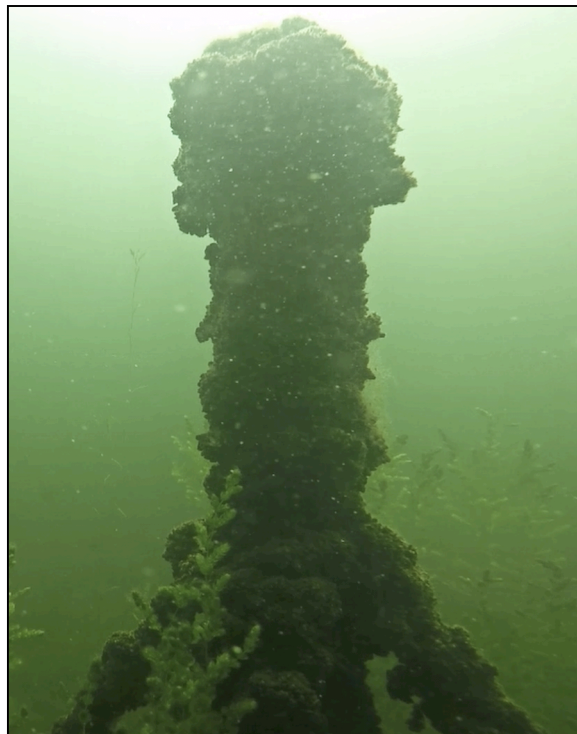
Water Intake Pipe Site (Anomaly 161)

MHM recorded a sonar image of Anomaly 161 in September 2011 during the LMS-1 Project and volunteer Kelly Nehowig identified the site in early June 2016, identifying it as a water intake pipe. MHM revisited the site in mid-July to take specific measurements. The pipe stands 7.60 feet off the lake bottom, has a 1.20-foot diameter,

and is supported by 4 legs that are .60 feet in diameter. Anomaly 161 is profusely covered in zebra mussels, but after the removal of the shells from the tip of the intake pipe, a slatted strainer was identified. MHM suggests the Water Intake Pipe Site, as part of Lake Minnetonka's maritime infrastructure, supplied water to the Gideon Bay area. The Water Intake Pipe Site was an important link in the public utilities chain as greater amounts of infrastructure was required to sustain a growing and permanent population on Lake Minnetonka beginning in the 1890s. Not enough information is known about Anomaly 161 at this time to designate it as an archaeological site; however, it is a protected maritime historical resource.



MHM's sonar image of the Water Intake Pipe Site.



Above and Left: Anomaly 161, covered in zebra mussels (Kelly Nehowig).

Sailboat Buoy Site (Anomaly 597)

MHM recorded a sonar image of Anomaly 629 in May 2012 during the LMS-2 Project and identified the site as a sailboat buoy (DNR 2016, 25) in mid-June 2016. Normally buoys float off of a person's dock or property to moor a sailboat. The buoy is tethered to 4 or 5 concrete blocks and rises 25 feet into the water column; it is 5 feet below the surface. The buoy is white with a blue stripe.

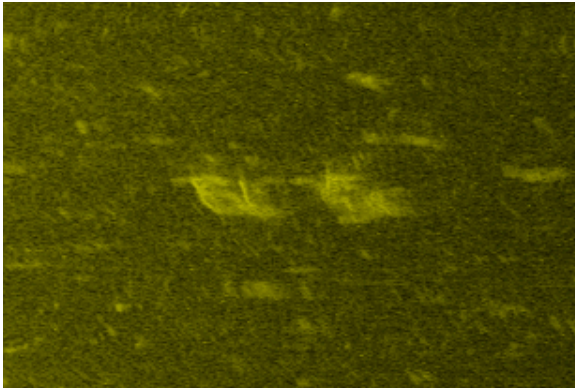
MHM's sonar image of the Sailboat Buoy Site.



Anomaly 597 in the water column (Mark Slick).

Boat Lift Site (Anomaly 622)

MHM recorded a sonar image of Anomaly 622 in May 2012 during the LMS-2 Project and identified the site as a boat lift in late August 2016. Unlike other boat lifts documented by MHM in Lake Minnetonka and White Bear Lake, Anomaly 622 has a hand crank to raise a boat out of the water instead of a large wheel. No frame for a canopy is attached to Anomaly 622, but it may have had one before it sank.



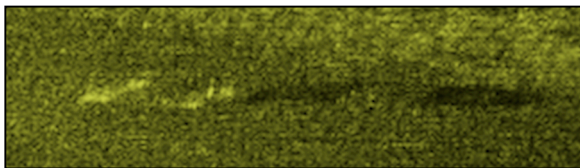
MHM's sonar image of Anomaly 622,



The crank of the Boat Lift Site (Anomaly 622, Kelly Nehowig).

Boat Lift Site (Anomaly 96.1)

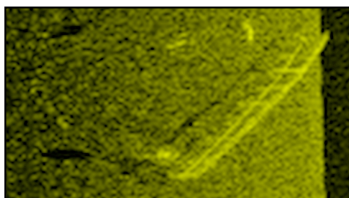
MHM recorded a sonar image of Anomaly 96.1 in May 2012 during the LMS-2 Project and identified the site as a boat lift during a sonar data review. Due to the anomaly's distinctive acoustical signature, MHM did not dive on the site. Underwater archaeology is undertaken to answer questions and identifying Anomaly 96.1 through sonar is adequate to document the Boat Lift Site at this time.



MHM's sonar image of Anomaly 96.1, a Boat Lift Site.

Boat Canopy Frame Site (Anomaly 85)

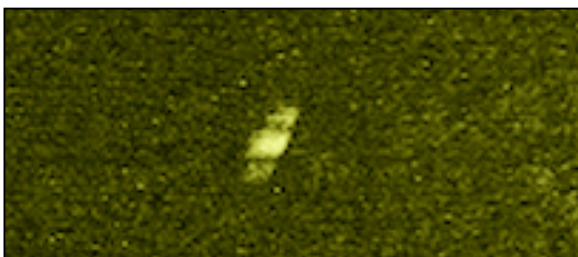
MHM recorded a sonar image of Anomaly 85 in May 2012 during the LMS-2 Project and identified the site as a boat canopy frame during a sonar data review. Due to the anomaly's distinctive acoustical signature, MHM did not dive on the site.



MHM's sonar image of Anomaly 85, a Boat Canopy Frame Site.

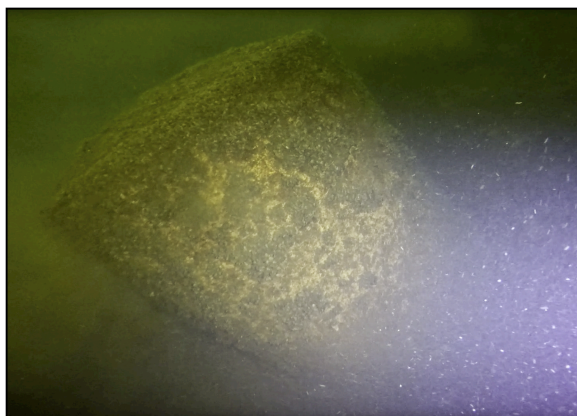
Steel Storage Tank (Anomaly 584)

MHM recorded a sonar image of Anomaly 584 in May 2012 during the LMS-2 Project and identified the site as a metal cylinder in mid-June 2016. The cylinder is partially buried, with 6.00 feet of it protruding from the lake bottom, and it is 3.30 feet in diameter. MHM has determined it is a welded steel storage tank for liquids; what kind of liquids or how they were used is unknown, as is the date of Anomaly 584's disposition on the lake bottom.



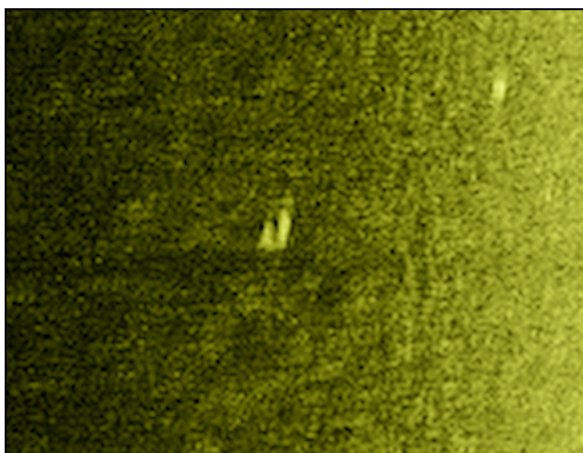
Above: MHM's sonar image of Anomaly 584, a steel storage tank.

Right: Anomaly 584 (Mark Slick).



Meat Smoker (Anomaly 604)

MHM recorded a sonar image of Anomaly 604 in May 2012 during the LMS-2 Project and identified the site as a metal cylinder in mid-June 2016. The cylinder is 3.00 feet long, it has a hinged lid, and has a vent cut into one end. MHM contends it is a meat smoker made from a modified storage container. The date of Anomaly 604's disposition on the lake bottom is unknown.



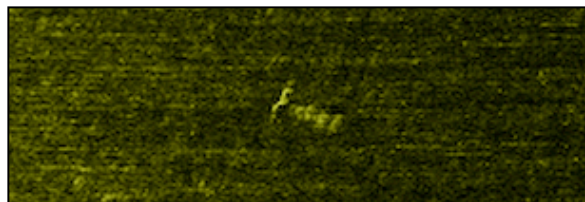
MHM's sonar image of Anomaly 604, a meat smoker.



One end of Anomaly 604 (Mark Slick)

Anchor, Metal, Glass, and Wood Site (Anomaly 599)

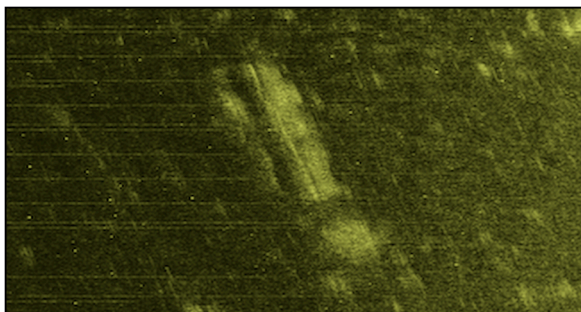
MHM recorded a sonar image of Anomaly 599 in May 2012 during the LMS-2 Project and dove on the site in mid-June 2016. The site has zero visibility, but with strong lights it was determined the site is comprised of a jumble of metal, glass, wood, and a Danforth anchor that is mostly buried in silt. A theory about the site formation process that created Anomaly 599 is that the combination of materials was blown off of an exploding boat, possibly Anomaly 600 (see above). This theory is conjecture and more research must be conducted, including a return to the site.



MHM's sonar image of Anomaly 599, a jumble of different objects.

Power Pole (Anomaly 141)

MHM recorded a sonar image of the Power Pole (Anomaly 141) during the LMS-1 Project in September 2011 and in mid-July 2016 identified it as a power pole. The pole is 22.90 feet long and 1.20 feet in diameter. While Anomaly 141 is simply a tree with no branches, it is a human-modified object that is classified as artifact.



Above: MHM's sonar image of Anomaly 141, a power pole or possibly a dock piling.

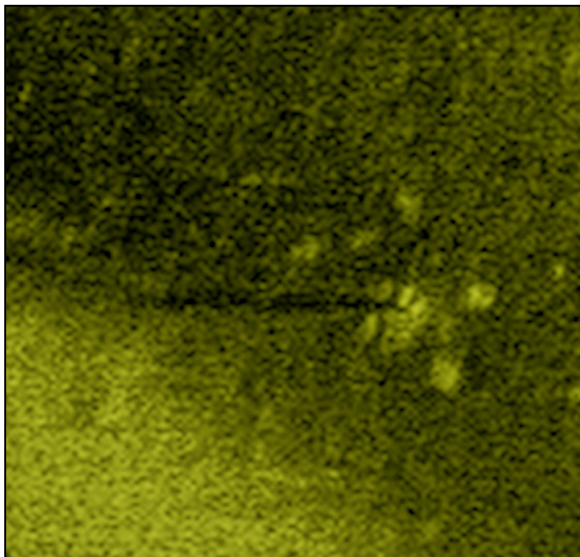


Right: The top of the power pole (Kelly Nehowig).

Cut Tree Stump (Anomaly 225)

MHM recorded a sonar image of Anomaly 225 in September 2011 during the LMS-1 Project. The object appeared to be small, but cast a significant acoustical shadow. In early August 2016, MHM identified Anomaly 225 as a tall cut tree stump. The stump rises 8.70 feet off the lake bottom and 2.00 feet in diameter. MHM contends the stump was dragged onto the ice to dispose of it, and it sank in 60 feet of water during ice out. The investigation of the Cut Tree Stump proved interesting; the dive took place at 11 am, but it could have been a night dive. The water clarity was excellent, but no sunlight

reached the bottom; without lights, the area was pitch black. This object was left over from a cut tree that has been modified by humans, and is technically an artifact. Anomaly 225 is the third cut stump located in open water and not along a shoreline; Anomaly 13 in Browns Bay and Anomaly 563 in Wayzata Bay are the others.



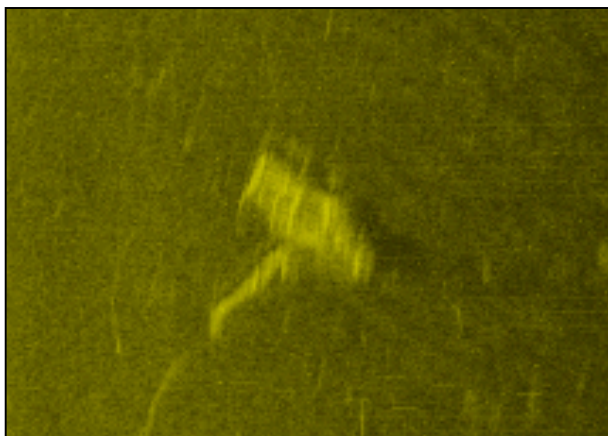
MHM's sonar image of Anomaly 225.



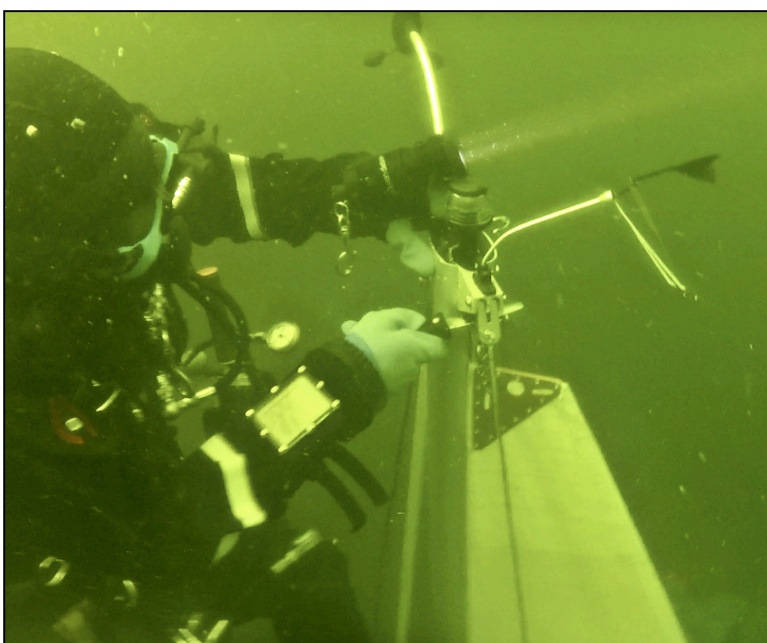
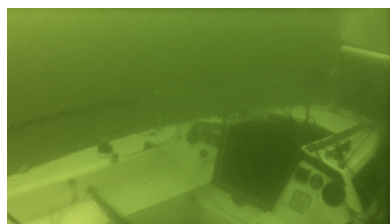
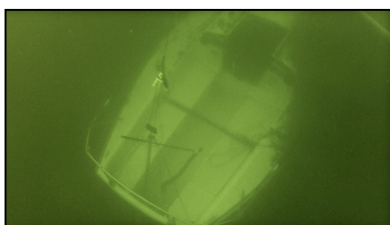
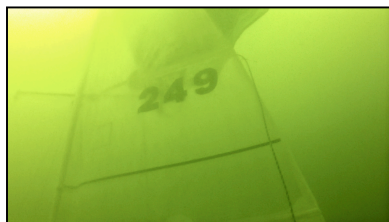
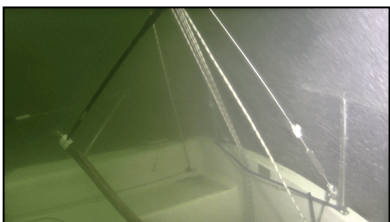
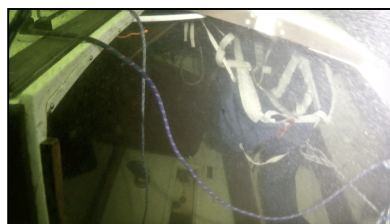
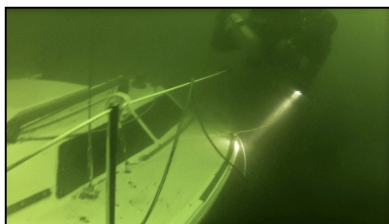
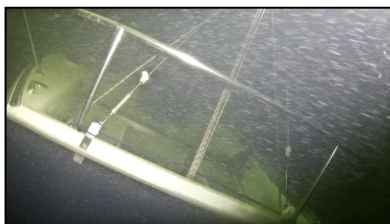
The top of the cut stump (Mark Slick).

Lickety Split

In early July 2016, MHM volunteer Ed Nelson contacted MHM for assistance in locating a 25-foot Capri sailboat that sank the previous evening during a race. Ed is a member of the Wayzata Yacht Club and was participating in the event. Ed and MHM's Christopher Olson located the wreck, buoyed her, and she was raised the following day. MHM documented the submerged boat and the raising process. *Lickety Split* provided MHM with a rare opportunity to document a recently sunken boat; MHM did not use grant funds for this activity.



MHM's sonar image of *Lickety Split* in 60 feet of water.



Different views of *Lickety Split* on the bottom of Lake Minnetonka.
 Right: Ed Nelson cutting the main halyard to make her raising easier (MHM).

Below: The raising of *Lickety Split* (MHM).





Lickety Split on the surface and being pumped out. Her owner informed MHM that she was ready to sail again in about 1 week (MHM).



Anomalies 94, 602, 612

Sonar images of Anomalies 94, 602, and 612 were recorded during the LMS-2 Project in 2012. These three anomalies were identified during the LMNA-6 Project as cut logs or parts of unprocessed trees.

Anomalies 8.3, 227, 239.1, 523, 556, 578, 606

Sonar images of Anomalies 8.3, 227, 239.1, 523, 556, 578, and 606 were recorded during the LMS-1 and LMS-2 Projects in 2011 and 2012. Their sonar signatures suggested they might be human-made objects because they had substantial acoustical shadows and their shape suggest straight lines. After diving on these anomalies during the LMNA-6 Project, it has been determined that they are rocks.

Anomalies 16, 23, 93, 96, 524, 586, 587, 589, 594, 603, 607, 609, 620, 631

MHM recorded sonar images of Anomalies 16, 23, 93, 96, 524, 586, 587, 589, 594, 603, 607, 609, 620, and 631 during the LMS-1 and LMS-2 Projects. They were determined to be false targets during the LMNA-6 Project. The anomalies were contours on the lake bottom that suggested human-made objects.

Conclusion

The LMNA-6 Project produced interesting and significant results, particularly identifying 11 new wrecks, 5 new maritime sites, and the expansion of another site on the bottom of Lake Minnetonka. These wrecks and sites join dozens of other submerged cultural resources already identified in the lake. Comparing and associating these new sites with known sites increases our understanding of the historical context within which these cultural resources operated or were exploited by Minnesotans. Firstly, the Fisherman's Friend Wreck 2 (21-HE-489) and the Flat Bottomed Rowboat Wreck 1 (21-HE-488) are noteworthy because of their athwartships bottom planking and keel-less design, a construction method that required less skill to accomplish. Of the 11 small wooden wrecks identified on the lake bottom to date,¹² these two wrecks – along with the Fisherman's Friend Wreck (21-HE-485) – are the only examples that reflect this construction attribute. Further, the Flat Bottomed Rowboat Wreck (21-HE-488) is also remarkable for its sharply-pointed and steeply-raked bow with its rub strake and composite stempost. These design attributes, put together, reflect a purpose-built vessel designed for shallow water travel and to withstand hard landings on rocky shores. For comparison, the Hopper Barge Wrecks (21-HE-441), two of the larger wooden wrecks in the lake, are also athwartships planked. These 2 large and sturdy work boats were constructed by master craftsman Captain John R. Johnson of Excelsior.¹³ These 5 examples of athwartships planked vessels, 2 large and 3 small, were similarly constructed. However, the skill level needed to produce them was vastly different; 2 of the small rowboats (21-HE-485, 21-HE-389) could have been constructed by a local boatworks or by an individual with minimal construction experience. The other small wreck (21-HE-488) and the Hopper Barges required more knowledge of watercraft construction and skill to produce.

Periodic visits to Lake Minnetonka's submerged cultural resources that are known to the diving community are valuable tools that allow MHM to determine if damage has occurred to these protected sites. Therefore, the Streetcar Boat *White Bear* (21-HE-281) site assessment was a useful exercise that allowed MHM to ascertain the current condition of the wreck – and possible changes that occur over time. The sketch created for the SHPO in the 1990s acted as a guide for wreck navigation and using it gave MHM an opportunity to determine its basic accuracy.

The Ramaley Family Motor Boat Wreck (21-HE-490) is a first generation non-steam personal watercraft that is a precursor to the fast and agile wood, aluminum, and fiberglass runabouts and utilities constructed post-World War 2. With this known, 21-HE-490 is an ancestor to these known wrecks on the bottom of Lake Minnetonka: Wooden Outboard Utility Wreck (21-HE-491), Damaged Bow Utility Wreck (21-HE-447), Wooden Utility Wreck (Anomaly 26.1), Century Deluxe Utility Wreck (21-HE-423),

¹²Gideon Bay Wreck (21-HE-415), Wayzata Bay Wreck (21-HE-417), St. Louis Bay Wreck (21-HE-422), Crystal Bay Rowboat Wreck (21-HE-457), Wooden Motor Boat Wreck (Anomaly 467), Maxwell Bay Rowboat Wreck (21-HE-469), Fisherman's Friend Wreck (21-HE-485), Wooden Sloop Wreck (21-HE-486), North Arm Rowboat Wreck (21-HE-487), Flat Bottomed Rowboat Wreck (21-HE-488), Fisherman's Friend Wreck 2 (21-HE-489)

¹³See MHM's *LMNA-3 Project Report* for more information.

Correct Craft Utility Wreck (21-HE-467), Alumacraft Center Console Model R Wreck (21-HE-448), Alumacraft Model R Wreck (Anomaly 21.1), *Doug Out* Wreck (21-HE-493), Correct Craft Aqua Skier Deluxe Wreck (21-HE-424), Owens Twin Sport Wreck (Anomaly 91), Small Utility Wreck (Anomaly 601), Fiberglass Drag Boat Wreck (Anomaly 23), Span America Nomad Wreck (Anomaly 126.1), Burned Fiberglass Composite Wreck (Anomaly 600), Blue Star Miamian Custom Wreck (21-HE-bn), Damaged Fiberglass Outboard Wreck (Anomaly 585), Red Fiberglass Wreck (Anomaly 32), and Larson Delta Sport Cruiser Wreck (Anomaly 464) – to the ultimate personal watercraft, the Spirit Marine Wetbike Wreck (Anomaly 629).

Before the LMNA-6 Project began, the *Doug Out* Wreck (21-HE-493) left MHM with the most questions pertaining to her nature when compared to older sites on the lake bottom. Now MHM understands that *Doug Out* is aluminum – not fiberglass – and may be a Correct Craft special order or modified kit boat from the early 1950s. Or, her owner may have simply put Correct Craft step pads on another brand of vessel. Regardless, *Doug Out* is historically significant because she is an early – and well-constructed – aluminum inboard vessel with wooden decks and gunwales. She is unique to the Minnesota underwater archaeological record because the aluminum and wood combination for an inboard boat of any vintage is a rare attribute.

The Twin Motor Cabin Cruiser Wreck (21-HE-492) is the third cabin cruiser wreck identified on the bottom of Lake Minnetonka. The others, the Wooden Trunk Cabin Cruiser Wreck (21-HE-446) and Owens Cruiser Deluxe Wreck (Anomaly 55), are damaged while 21-HE-492 is in nearly pristine condition. Additionally, her cold molded diagonal planking makes her a one-of-a-kind in Minnesota underwater archaeology. Regardless of her 1974 construction, MHM has questions about the Fiberglass Sailboat Wreck (Anomaly 595) due to a discrepancy in her hull length and the historical record. Only further archaeological and historical research can answer questions.

Other maritime sites identified during the LMNA-6 Project, the Sailboat Buoy Site (Anomaly 597), 2 Boat Lift Sites (Anomalies 96.1 and 622), and the Boat Canopy Frame Site (Anomaly 85) represent mooring spots and dock structures that are used with boats. The lifts and canopies are not vital to the operation of boats on Lake Minnetonka, but they are aids to maintenance by protecting boats from continuous water and sun exposure. Anomaly 599, the Anchor, Metal, Glass, and Wood Site, will remain unidentified until further underwater archaeological reconnaissance is conducted. The Water Intake Pipe Site (Anomaly 161) represents a type of infrastructure that has allowed the permanent occupation of Lake Minnetonka, as well as supporting the operations of tourist destinations, marinas, restaurants, and other businesses. MHM values this type of submerged maritime site since it reminds Minnesotans that a successful community often relied on unseen infrastructure that was designed and constructed by engineers and laborers who used their skills to support a population on Lake Minnetonka. The Fire Rubble Site (Anomaly 8.1a-c) represents an affluent vacation or club property of the late 19th or early 20th Century; further research may answer this question.

Three Ford cars (dating from 1923-1938) – 1 complete and overturned (Anomaly 209), 1 touring car body (Anomaly 642), and 1 coupe wooden frame (Anomaly 78) – identified during the LMNA-6 Project join the other vehicle sites already identified: 1919-1925 Ford Model T Doodlebug (21-HE-bm), 1936 Plymouth Sedan (Anomaly 460), 1955 Mercury Monterey Sedan (Anomaly 20.1), 1974 Chevy Caprice Classic Coupe (Anomaly 57), and a 1994~2011 Dodge Ram Laramie SLT (Anomaly 27). These 8 vehicles are on the lake bottom for a variety of reasons but all represent transportation on ice during winter. The Meat Smoker (Anomaly 604) and Welded Steel Storage Tank (Anomaly 584) were dumped into the lake, most likely as a cheap way to get rid of them. Lastly, even though the Cut Tree Stump (Anomaly 225) is just a cut stump, it is a submerged cultural resource since human beings modified it. It is part of Lake Minnetonka's history that represents the vast deforestation that occurred during the latter half of the 19th Century.

The diversity of nautical, maritime, and underwater sites so far identified in Lake Minnetonka are tangible examples of the rich maritime history of the area. Through research, diving on wrecks and anomalies to collect pertinent data, and ensuring that the collected information is accessible by the public, MHM will continue to investigate Lake Minnetonka's submerged cultural resources into the future. MHM continually re-examines the recorded sonar footage from the LMS-1 and LMS-2 Projects, and spot re-scanning has occurred in different areas of the lake, using knowledge gained from the comparison of anomalies that have proven to be wrecks or other submerged cultural resources in past projects. Several hundred more anomalies have been identified from this on-going sonar review. The results of the LMNA-6 Project summarized above is connected to all the work that came before and that will come after its completion. It is clear that the types of sites that exist in Lake Minnetonka are diverse, archaeologically and historically significant, and worthy of great attention. To date, the watercraft located on the bottom of Lake Minnetonka represents nearly 1,000 years of Minnesota's maritime history and nautical archaeology. In the historic period, the known wrecks represented in the lake span 140 years of local maritime culture. The data collected during the LMNA-1-6 Projects have been utilized to create the Lake Minnetonka Multiple Property Documentation Form, a guide that will be used to nominate Lake Minnetonka's submerged cultural resources to the National Register of Historic Places (NRHP). At this point, the Wayzata Bay Wreck (21-HE-401) has been successfully nominated to the NRHP by MHM.

References

- Atkin, William. ND. "Shoals Runner: A Tunnel-Stern V-Bottom Seabright Skiff". Atkin & Co. Website. <http://www.atkinboatplans.com/Utilities/ShoalsRunner.html>.
- The Automobile*. 1904. "American Harmsworth Cup Challenger", 2 July, 5-6.
- Deephaven Argus*. 1965, 2 July.
- Department of Natural Resources. 2016. *Minnesota Boating Guide 2016*. State of Minnesota, Department of Natural Resources: St. Paul, MN.
- Hall, Solly. 1951. "Big Defense Construction Program" in *Motorboating*. October: 84-85.
- Hall, Wes, Douglas Birk, and Sam Newell. 1997. *Shipwrecks of Minnesota's Inland Lakes and Rivers*. Prepared for the Minnesota State Historic Preservation Office by Mid-Atlantic Technology and Environmental Research, Inc.: Castle Hayne, NC.
- Hemmel, Jeff. 2015. "Whatever Happened to the Wetbike?" <http://www.personalwatercraft.com/features/whatever-happened-to-the-wetbike-1335.html>
- Hield, Clifford C. 1910. *Service Test and Speed Trials of the Steamboat "Whitebear"*. BS Thesis, Massachusetts Institute of Technology: Cambridge, MA.
- Marken, M.W., A. Ollendorf, P. Nunnally, and S. Anfinson. 1997. *Beneath Minnesota Waters: Minnesota's Submerged Cultural Resources Preservation Plan*. Summit Envirosolutions, Inc. and Braun Intertec, St. Paul. Report prepared for the State Historic Preservation Office, Minnesota Historical Society: St. Paul, MN.
- McCalley, Bruce W. 1994. *Model T Ford: The Car That Changed the World*. Krause Publications: Iola, WI.
- Moraitis, Vasilis. ND. "Kawasaki Jet Ski History". Jet Ski World Website. http://www.jet-skiworld.gr/index_eng.php
- Motorboating*. 1951, January; 1952, May, September; 1953 October; 1954, May; January-February, 1960.
- Nock, F. S. 1907. "Motorboat Sterns and Stems" in *The Motor Boat*. Vol. 10, No. 4: 13-17.
- Owens Yacht Company, Inc. 1960. *Owens Fiberglas "15" and "17" Outboards*. Owens Yacht Co., Inc.: Baltimore, MA.

Pacific PWC. 2016. "Remember the Wetbike?" in *Pacific PWC: Personal Watercraft Magazine*. 142-143.

Ramaley Boat Company. ~1913. *Ramaley Row Boats*. Ramaley Row Boats: Wayzata, MN.

Ramaley Boat Works. 1911. *Ramaley Boats*. Ramaley Boat Works: White Bear Lake, MN.

Schieffelin, John. 1976. "New and Notable Gear" in *Boating*. July-August: 28.

Twin City Rapid Transit Company Records. 1905-1909. *Construction Records: Ledgers*. Minnesota Historical Society: St. Paul, MN.

Vintage Sea Doo Website. ND. "Introducing Sea Doo...the jet powered aqua scooter".
http://members.tripod.com/austin_america/vintageseadoo/